

# Operators Manual & Parts List

# MAJOR SWIFT ROLLERMOWERS

Three point linkage models: MJ70-190, MJ70-240 MJ70-320, MJ70-410, MJ70-550

Front mounted models: MJ70-190FM, MJ70-240FM MJ70-320FM, MJ70-410FM

Trailed models MJ70-410T, MJ70-550T



#### **Head Office**

Major Equipment Intl. Ltd. Ballyhaunis, Co. Mayo, Ireland.

Tel.: +353 (0) 9496 30572 Fax: +353 (0) 9496 30788

Email: info@major-equipment.com

#### **UK Office**

Major Equipment Ltd. Major Industrial Estate, Middleton Rd., Heysham, Lancs. LA3 3JJ

Tel.: +44 (0) 1524 850 501 Fax: +44 (0) 1524 850 502

Email: ukinfo@major-equipment.com

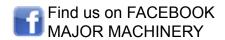
#### **NETHERLANDS & GERMANY OFFICE**

Major Equipment Intl. Ltd. Postbus 29, NL-7700 AA, Dedemsvaart, Nederland.

Tel: +31 (0) 6389 19585

Email: euinfo@major-equipment.com

Web: www.major-equipment.com





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Major reserves the right to modify the machinery and the technical data contained within the manual without prior notice.

Further to this, Major assumes no liability for any damages which may result from the use of the information contained within this manual.

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#### **EEC certificate of conformity for machines**

(conforming to Directive 98/37/EEC)

Company: Major Equipment Ltd.

Address: Coolnaha,

Ballyhaunis, Co. Mayo, Ireland.

Tel. +353949630572 Fax +353949630788

declares in sole responsibility that the product:

#### **MJ70 ROLLERMOWER (SWIFT)**

When properly installed, maintained and used only for it's intended purpose, complies with all the essential Health & Safety requirements of:

- THE SUPPLY OF MACHINERY (SAFETY) REGULATIONS 2008.
- **S.I. No. 299 of 2007**, Safety, Health and Welfare at Work (General Application) Regulations 2007 (Ireland).
- Health & Safety at Work, etc. Act 1974 (c.37) (UK).
- EN ISO 14121-1: 2007 'Safety of machinery. Principles for risk assessment'.
- EN 745 Agricultural Machinery Rotary Mowers and Flail Mowers Safety.
- **EN ISO 13857** Safety of machinery: Safety distances to prevent hazard zones being reached by upper and lower limbs.

I certify on behalf of Major Equipment Int. Ltd., that this machine when properly installed and operated correctly, complies with all the essential Health & Safety requirements of all legislation referred to above.

Signature:

**Managing Director** 

Date 12/06/2013

# Introduction

#### Thank you

We appreciate having you as a customer and wish you many years of safe and satisfied use of your machine.

#### **Using Your Operator's Manual**

This manual is an important part of your machine and should remain with the machine when you buy it. Reading your operator's manual will help you and others avoid personal injury or damage to the machine. Information given in this manual will provide the operator with the safest and most effective use of the machine.

Sections in your operator's manual are placed in a specific order to help you understand all the safety messages so you can operate this machine safely. You can also use this manual to answer any specific operating or servicing questions.

#### **Safety Aspects**

Your manual contains special messages to bring attention to potential safety concerns, machine damage as well as helpful operating and servicing information. Please read all the information carefully to avoid injury and machine damage.

#### Intended use

This machine is a grass cutting machine and designed for cutting grass. Moreover, it must only be used with a suitable tractor (see "Product Specifications" section of this booklet) and driven by an adequate drive-line of the tractor PTO. All other use is strictly prohibited.

# **Product Identification**

#### **Machine Serial Numbers**

If you need to contact MAJOR or your MAJOR dealer for information on servicing or spare parts, always provide the product model and serial numbers. Model and Serial number can be found on the Serial Plate located on the machine.

We suggest that you record your machine details below:

Model No:	MAJOR EQUIPMENT INTLLTD	CE
Serial No:	BALLYHAUNIS, CO MAYO, IRELAND TEL: +353 (0) 9496 30572 EMAIL: Info@major-equipment.com	MAJOR
Date of Purchase:	MAJOR EQUIPMENT LTD (UK) MAJOR IND. ESTATE. HEYSHAM. LANCS, LAS 3JJ, UK	Sunal Number Senentummer
Dealer Name:	TEL +44 (II) 1524 ISSSS1 EMAIL: ukinfo@major-equipment.com MAJOR EQUIPMENT INTL LTD	Model/Modell
Dealer Telephone:	POSTBLES NIL-7700 AA DEDEMSVAAKT, NEDERLAND TEL + 31 (6) 8389 19585 EMAIL: euinfo@major.equipment.com	Year of manufacture/Baujahr

#### **Register Your Product and Warranty Online**

To register your product through the Internet, simply go to the Support section on www.major-equipment.com. Completing the information, either online or with the product warranty card, will ensure the customer that their product receives all post sales service and important product information.

This machine is warranted for 12 months with. No warranty is given where the machine is being used as a hire machine. Warranty is against faulty workmanship or parts.

Warranty covers parts only. All parts must be returned to the manufacturer. No warranty can be considered unless parts are returned. All replacement parts will be supplied on a chargeable basis until warranty has been accepted.

#### **Product Specifications**

Model	Overall Width	Working Width	Transport Width	Power (HP)	PTO rpm	Cutting Height (mm)	Rotors/ Blades	Weight (kg)	Blade tip speed (m/s)	Mowing Rates (Acres/hr at 7mph)
MJ70-190	2.0m (6' 6")	1.9m (6' 3")	2.00m (6' 6")	25-70	540	10-150	3/6	465	75	5.3
MJ70-240	2.5m (8' 2")	2.40m (8')	2.50m (8' 2")	30-80	540	10-150	4/8	570	75	6.7
MJ70-320/ MJ70-320FM	3.3m (11' 4")	3.2m (11')	2.3m (7' 6")	40-90	540/1000	10-150	5/10	925/905	90	8.9
MJ70-410/ MJ70-410FM	4.2m (13' 9")	4.1m (13' 5")	2.0m (6' 6")	50-100	540/1000	10-150	6/12	1130/1100	90	11.5
MJ70-550	5.6m (18' 4")	5.5m (18')	2.0m (6' 6")	70-120	540	10-150	8/16	1310	90	15.4
MJ70-410T	4.2m (13' 9")	4.1m (13' 5")	2.0m (6' 6")	50-100	540	10-150	6/12	1390	90	11.5
MJ70-550T	5.6m (18' 4")	5.50m (18')	2.0m (6' 6")	70-120	540	10-150	8/16	1585	90	15.4

# Safety

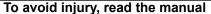
#### **Machine Safety Labels**

The machine safety labels shown in this section are placed in important areas on your machine to draw attention to potential safety hazards.

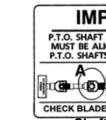
On your machine safety labels, the words DANGER, WARNING, and CAUTION are used with this safety alert symbol. DANGER identifies the most serious hazards.

The operator's manual also explains any potential safety hazards whenever necessary in special safety messages that are identified with the word, CAUTION, and the safety-alert symbol



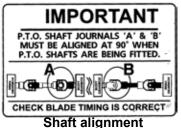








Rotating blade hazard











**PTO** entanglement hazard - keep clear of PTO drives.



- DO NOT GO NEAR LEAKS

High oil pressure hazard

#### Hazards associated with operating Grass Cutting Machinery

#### **Shear Hazard**

Shear hazards are created when the edges of two objects move toward or next to each other closely enough to cut relatively soft material. This can include the parts of the machine under hydraulic control when operating from transport to mowing position. Note, the wing units are designed to float independently of the centre deck & are free to move within operating limits.

#### **Crush Hazard**

Bystanders can be injured when machine is lowered into mowing position. Winged machines have crush points around the hinge areas & between the wing & main body. Always use transport locking bars when not in use (winged models only).

#### **Rotating Blade Hazard**

All persons are at risk if they place their hands or feet under the machine when it is raised from the ground when the blades are in motion.

#### **Pinch Hazard**

Pinch points are created when two objects move together, with at least one of them moving in a circle. This hazard is common in power transmission devices such as Belt Drives, Gear Drives & Rollers. Ensure all guarding is present.

#### **Wrap Hazard**

Any exposed, rotating machine component is a potential wrap point. Injuries usually occur when loose clothing or long hair catch on and wrap around rotating parts such as PTO shafts or Drive shafts on the machine. Ensure all guarding is present.

#### Free-wheeling parts Hazard

The heavier a revolving part is, the longer it will continue to rotate after power is shut off. This characteristic is called 'free-wheeling.' Blades, and various other components, drive shafts etc., will continue to move after power is shut off often for several minutes. Injuries occur when:

- Operators shut off equipment, and attempt to clean or adjust a machine before components have completely stopped moving.
- Shear bolt protection device in PTO shaft shears & the mowing parts are still spinning but the primary PTO shaft is stationary. Operator awareness is the key to safety around freewheeling parts. Never raise the machine while the blades are still rotating.

#### **Thrown objects Hazard**

Machines throw material as a natural part of doing their job. Foreign objects, such as stones, sticks and other debris, may be taken into this equipment and expelled at tremendous speed. These objects are contained by the sides of the machine and by the rear/front rollers / guards / chain guards / rubber skirts depending on model of your machine. Ensure bystanders are clear from the machine & cannot be hit with debris expelled from the machine. Bystanders or animals in the path of thrown objects could be seriously injured. Never operate machine with decks raised from the ground as this makes the front/rear protection redundant.

#### **Hydraulic Hazard** (if applicable)

Hydraulic systems store considerable energy. Careless servicing, adjustment, or replacement of parts can result in serious injury. High pressure blasts of hydraulic oil can injure eyes or other body parts. The following precautions are crucial:

- · Make certain the hydraulic pump is turned off.
- · Lower attached equipment to the ground.
- Confirm that load pressure is off the system.

A pinhole leak in an hydraulic hose is a serious hazard. A leak may not be visible, and the only sign may be a few drops of fluid. Never inspect hydraulic hoses with your hands, because a fine jet of hydraulic fluid can pierce the skin.

#### Slips, Trips and Falls Hazard

Slips and falls often result from:

- 1. Slippery footing on the ground
- 2. Cluttered steps and work platforms.

The potential for slips and falls can be greatly reduced by using good judgement and practicing good housekeeping on and around equipment.

#### **Noise Hazard**

Please note that the machine is normally used outdoors and that the position of the operator is seated in the driving seat of the tractor. It is advisable to consult the prescriptions listed in tractor operator and maintenance manuals.

The acoustic pressure at a distance of 2.6m from the centre of the machine and at a height of 2.0m, with the implement operating in a no load condition can reach 90 dBA. In a loaded condition & a PTO rate of 540 rpm the value can reach 97dBA. Higher rate of PTO input will result in in higher noise levels. Always wear hearing protection.

#### **Operating Safely**

This MAJOR machine is designed to operate at a PTO rate which is stated in the Product Specifications part of this booklet. Ensure tractor PTO output is set at a correct RPM rate. This MAJOR machine must only be used for purposes outlined in the Intended Use section of this booklet. All other use is strictly prohibited.



Users should become thoroughly familiar with the contents of this manual before using, servicing and mounting the implement to the tractor and all other pertinent operations. Never wear jewellery, loose clothing such as ties, scarves, belts, unbuttoned jackets or dungarees with open zips which could become caught up in moving parts.



Always wear approved garments complying with accident prevention provisions such as non-slip shoes, ear muffs, goggles and gauntlets. Wear a jacket with reflecting stickers if the implement is used near public highways.



Consult your retailer, the Labour Health Service or your nearest equivalent authority for the information about the current safety provisions and specific regulations with in order to ensure personal safety.



ALWAYS DISENGAGE PTO, SWITCH OFF THE TRACTOR ENGINE AND ENGAGE THE PARKING BRAKE BEFORE MAKING ADJUSTMENT TO THE MACHINE.



NEVER PLACE LIMBS UNDER THE MACHINE WHILE ROTOR(S) ARE TURNING. ROTOR(S) CAN REMAIN TURNING FOR UP TO 1 MINUTE AFTER DISENGAGING PTO.

#### Workstation

The operator must remain seated while working the machine. If the machine is a winged unit and the wings need to be raised/lowered the operator must not leave the tractor. Always ensure the PTO has been turned off and the parking brake applied before leaving the tractor cab or carrying out maintenance.



NEVER OPERATE THE HYDRAULICS WITH THE TRACTOR SWITCHED OFF

#### Regulations for use of the transmission

The transmission to the gearboxes is protected throughout the machine by both PTO shafts and bolt down covers. All guarding should be kept efficient and in good condition. If the condition is poor, the guarding should be renewed before the implement is used.



UNLESS IT IS CORRECTLY PROTECTED THE TRANSMISSION COULD CAUSE DEATH SINCE IT CAN CATCH ON PARTS OF THE BODY OR CLOTHING

Ensure retaining chains are correctly anchored on all PTO shafts, preventing them from turning. Ensure drive line can turn easily within the shield. Keep spline grooves clean and greased so that PTO shaft can connect easily. Besides being described in this booklet, the method by which the PTO shaft is connected to the tractor must be checked out with the instructions in the tractor manufacturer's manual.

#### **PTO Shaft Safety**

Maximum PTO input is specified in the Product Specifications section of this booklet. Contact your nearest dealer or a specialised retail outlet if the PTO must be replaced with a longer one, since this must belong to the same power category and possess the same characteristics. An unsuitable PTO could easily break.

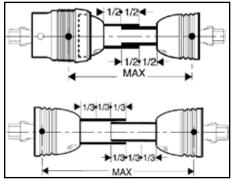
The tractor PTO shaft length may be altered to suit the individual tractor model. When the machine is in operation, the PTO shaft should have a minimum 1/3 engagement as shown in the diagrams. After the machine has been hitched to the tractor, it should be checked in various positions that the drive line is the correct length. If the PTO is too short and tends to slip out of place, it must be replaced with a longer one.

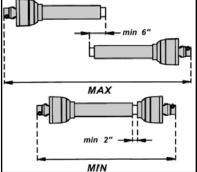
If the PTO shaft is too long, it should be shortened in the following way:

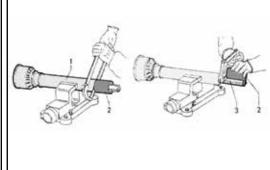
- Set the machine at a minimum distance from the tractor, then brake the tractor and switch off the engine.
- Separate the two halves of the PTO. Insert the female part into the tractor PTO and the male part into the machine PTO, checking that the position is correct by means of the fixing pins.
- Line up the two halves of the PTO together, keeping them parallel.
- Using a felt tip pen, match mark the place where the two halves must be shortened as shown.
- First cut shield "1" and use part "2" as a reference to cut the splined shaft.
- · Proceed in the same way for the second half.
- Trim and chamfer the two cut ends of the PTO and clean off all swarf and shavings.
- Grease the two profiles and join the two halves of the PTO together.
- · Mount the PTO shaft and check that its length is correct as before.



Do not use the shaft cone as a step







#### **Driving Safely on Public Roads**

Check the local Highway Code regulations before driving the tractor on public highways with an implement attached. Check the reflectors, hazard flashers and/or projecting load indicators are installed when required and efficient. These indicators must be installed correctly and easily seen by the drivers of other vehicles.

Bystanders must not be allowed to lean against or climb onto the machine during transport or while working. Do not allow bystanders to ride on the machine.



MAXIMUM TRANSPORT SPEED MUST NOT EXCEED 30 km/r (18 MPH) TRAILED MODELS MAXIMUM SPEED IS 25 km/h

#### **General safety instructions**

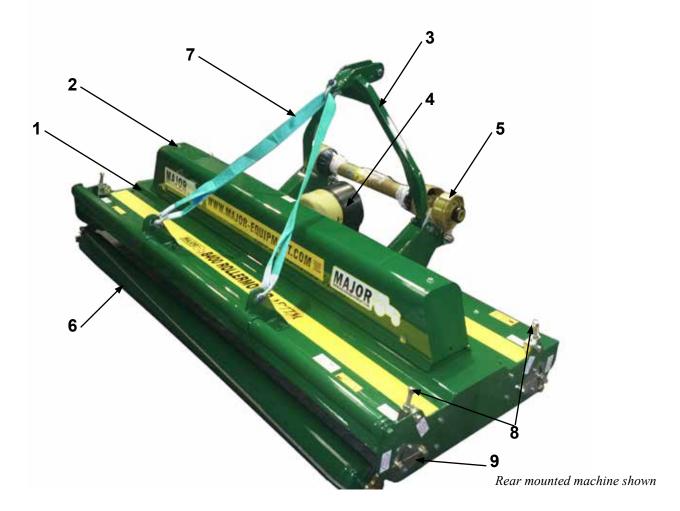
Precautions to be taken while working with the machine:

- 1. Do not operate the machine when you are tired;
- 2. Before starting mowing, make sure that the area is clear of people or animals.
- 3. Before starting adjusting the machine, it is mandatory to disconnect the PTO, to turn off the engine of the tractor, apply handbrake and wait for the turning parts to become still and placed on the ground.
- 4. It is mandatory to read all the safety requirements and the operator's manual of the machine.
- 5. If you are not sure how to use the machine, please contact the manufacturer or the dealer.

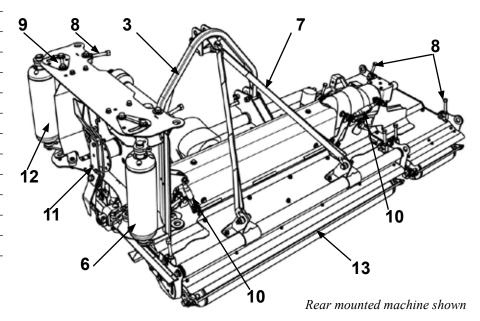
# **Operating the Machine**

This machine is designed to be connected to a tractor by using a standard 3 point linkage connection. It can be installed either to the front or to the rear of the tractor, depending on the model of your machine.

#### **Key to Main Parts**



1	Body
2	Drivetrain cover
3	A-Frame
4	Gearbox PTO cover
5	PTO shaft
6	Rear roller
7	Strap
8	Roller height adjuster rod
9	Roller height indicator
10	Top Link
11	Blade
12	Front roller
13	Scraper bar

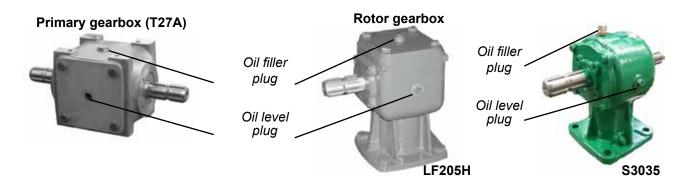


#### Inspections before Use

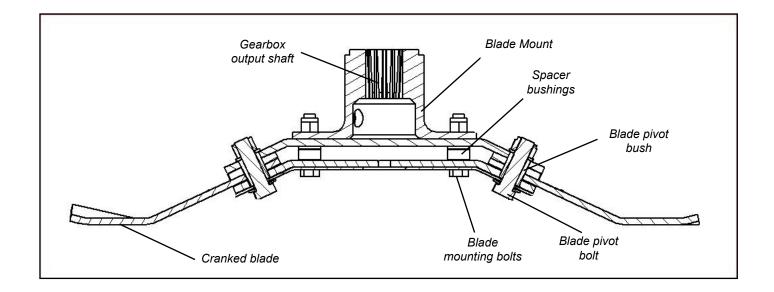


Always disengage PTO, Switch off tractor engine and engage the parking brake before making adjustments to the machine.

1. With the whole machine as level as possible, check the oil level in the Primary and Rotor Gearboxes and top up as required with recommended gear oil through the oil filler plug indicated. The correct level is at the oil level plug indicated.



- 2. Grease the PTO shaft universal joints, drive shaft bearing and carrying arm pivots.
- 3. Check the blades for wear and damage and replace worn blades with new ones if requried.
- 4. If the blade assembly is removed check the blade mounting ensure the gearbox shaft nut is tight and retained in place by split pin.



- 5. Check tightness of all nuts, bolts and retaining screws after the first and second hours of work.
- 6. Ensure safety guards and flaps are in place at all times where fitted. If these become worn or missing, replace them immediately with new ones.
- 7. Due to the corrosive nature of grass when cut, wash down the machine when finished mowing, especially when the machine is being stored for a long period of time.

#### **Starting Regulations**



Always check that any imminently dangerous conditions have been eliminated before using the machine. Ensure all guarding is present & the operator is fully aware of the operations of the machine.



Always ensure the pins lock the PTO shaft yoke ends onto the spline shafts on both the tractor and the implement. An unlocked shaft could slip out of position, causing notable mechanical damage and serious injury to both operator and bystanders.

#### Attaching the machine to the Tractor



Always operate on level ground when attaching/detaching the machine. This will prevent dangerous movement. Never allow anyone to stand between the tractor and the machine.

#### **Three Point Linkage Models**

- 1. Adjust both lift arms of the tractor until they are level in relation to each other.
- 2. Hitch the lower linkage arms to the Machine and connect the top link and PTO shaft. Ensure that the locking pins are secure.
- 3. With the Machine lowered in its operating position, adjust the top link until the strap is slack, allowing the Machine to produce a uniform finish in varying ground conditions.
- 4. Connect the PTO shaft. Check for the length

#### **Trailed Models**

- 1. Adjust the tractor hitch pin so that the hitch pin is approximately 400 mm (16") from the end of the tractor PTO shaft.
- 2. Adjust the machine hitch eye to suit the tractor drawbar height paying particular attention to keep both height adjusting bolts as far as possible on the adjusting bracket. Careful adjustment of the hitch eye height at this stage is necessary in order to allow the machine to function safely and correctly.
- 3. Connect the machine to the tractor. Ensure no one is standing between the tractor and the Machine.
- 4. Before connecting the PTO shaft to the tractor, check it for length as shown earlier.

#### **Transport Position**



Before raising the machine wait until the transmission and the blades are completely still. During the transport of the machine it is recommended that the PTO shaft is disconnected.

- 1. Check machine is hitched to the tractor as described. Ensure the tractor parking brake is applied
- 2. Ensure moving parts become still then transform the machine into transport position by hydraulic control
- 3. During the transport and any time the machine shall be raised, the raising device shall be adjusted to assure that the machine is at least 250mm over the ground.

#### **Transport Speed**



Transport Speed of MJ70-310T/410T/550T should not exceed 25 km/h

#### **Transport Position (Winged models only)**

ALWAYS HAVE THE TRACTOR SWITCHED ON WHEN RAISING THE WINGS INTO TRANSPORT POSITION.

IMPORTANT: The transport locking bars, transport pin and axle ram stopper should always be slotted into place while transporting the machine. Doing this removes pressure from the hydraulic system. Failure to use the safety equipment can cause mechanical as well as physical damage.

#### **Top Link Position**



**Transport Position** 

#### **Axle Locks**



**Transport Position** 



**Drawbar Locks** 

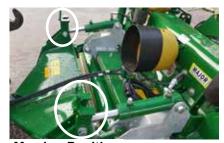
**Transport Position** 



**Mowing Position** 



**Mowing Position** 



Mowing Position

#### **Operating the Machine/Mowing**



Never place limbs under the machine while rotors are turning. Rotors can remain turning for up to 1 minute after disengaging PTO.



While operating this machine the PTO input rate should not exceed the RPM stated in the Product Specifications section of this booklet. Always operate on level ground when connecting/disconnecting the implement. This will prevent dangerous movement.



Never allow anyone to stand between the tractor and the machine. Ensure the machine is attached correctly to the tractor as previously described. Always start up the tractor PTO at a low RPM. Build up to operating speed, select a suitable forward gear & proceed to cut grass.

- 1. Hitch the machine as outlined in the previous section. Ensure bystanders are clear from the machine & cannot be hit with debris expelled from the machine.
- 2. Locate the Parking Jack on its side under the PTO shaft on the stub provided (Trailed models only)
- 3. Ensure the PTO stand is flipped down. (Trailed models only)
- 4. Check PTO shaft is fully engaged on tractor PTO splines.
- 5. Raise the machine by hydraulic control. (Trailed models only)
- 6. Flip back axle and drawbar ram stoppers. (Trailed models only)
- 7. Lower the machine by hydraulic control to the ground or use tractor linkage controls.
- 8. After clearing the vicinity of bystanders, relocate the Wing Transport Locking Bars. Lower the wings by hydraulic control. Ensure hydraulic ram is fully closed. (Winged mowers only).
- 9. Start up the tractor PTO at a low RPM.
- 10. Build up to operating speed, select a suitable forward gear & proceed to cut grass.

#### Roller and Castor wheels adjustment

In order to achieve desired cutting height, castor wheels and roller should be adjusted.

#### Castor wheels (optional)

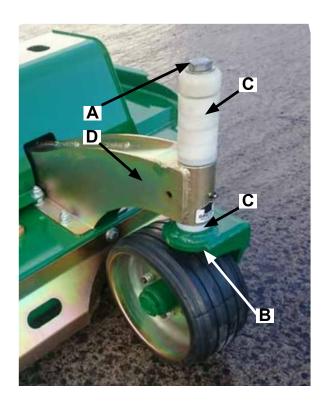
To adjust the height of front wheels lift up the machine and:

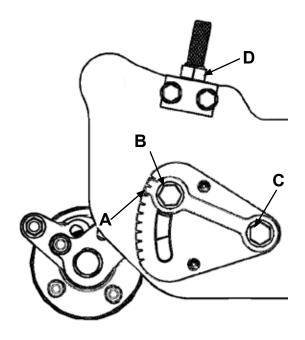
- 1. Unscrew and remove Bolt A;
- 2. Slide down the Castor Yoke **B** and remove it:
- Depending on the desired cutting height place Spacers C above or below Castor Arm D.
- 4. When adjusment is complete, relocate Castor Yoke **B** and secure it with Bolt **A**.
- 5. Repeat this procedure for the other wheel.

#### Roller

To adjust the height of the roller follow this procedure at both sides of the roller:

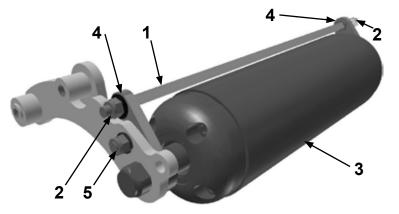
- 1. Loosen Bolts **B** and **C** (Note: You do not have to remove these bolts, half of the turn will suffice to allow movement);
- 2. Turn Nut **D** clockwise to increase the cut height or anticlockwise to decrease the cut height;
- 3. Match the height of the roller on both sides of the machine by checking the position of Arrow **A**;
- 4. When adjustment is complete, re-tighten Bolts **B** and **C**.





#### Scraper bar

Scraper bar is supplied as an optional extra. In order for a scraper bar to function properly, it should be kept tensioned. To tension the scraper bar (1) tighten up nuts (2) at both ends of the roller (3). Locate the scraper bar bracket (4) in a desired position by looseing/tightening bracket nut (5).



# **Maintenance**

The machine must always be disconnected form the tractor before any cleaning, lubricating and servicing operations can be carried out. Maintenance must be carried out by qualified personnel.

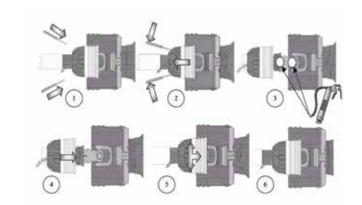
If emergency operations are required whilst the machine is connected to the tractor, switch off the engine, engage the parking brake and disengage the PTO.

Good, regular maintenance and correct use are advised if the machine is to remain safe and long lasting.

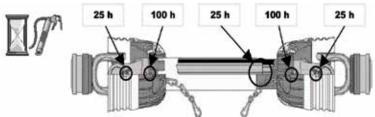
#### **PTO Shaft Maintenance**

Guard Removal and Yoke End Greasing

- 1. Prise back locking tabs
- 2. Pull back PTO Guard
- 3. Grease points as shown
- 4. Push Guard into position
- 5. Click into place
- 6. Tie check chain



#### **PTO Guard Greasing Intervals**



#### Maintenance of other components

• All nuts and bolts in the transmission including Rubber couplings, Star Drives, PTO Shafts and Gearboxes should be checked for tightenes after mowing at the following intervals:

1st 40 hours

1st 100 hours

1st 250 hours

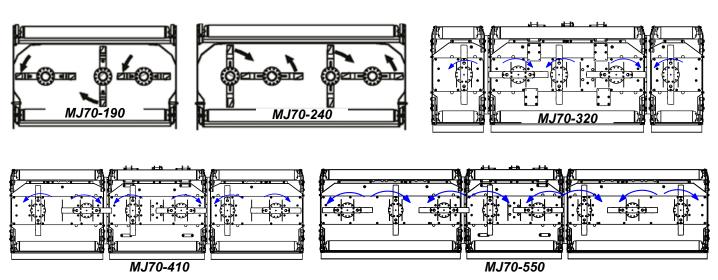
And every 250 hours thereafter.

• Check blades on a regular basis for wear. Replace any damaged or worn parts immediately.

#### **Blade Rotation**



Ensure blade rotation and timing (90 degrees) is correct after servicing transmission.

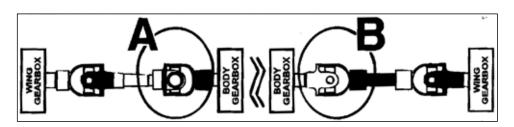


Blade rotation viewed from underside

#### Wing shafts alignment



ENSURE THAT AFTER SERVICING THE TRANSMISSION, THE WING PTO SHAFT YOKES ARE CORRECTLY ALIGNED AS SHOWN IN THE DIAGRAM BELOW – WINGED MODELS ONLY. IF THE SHAFT JOURNALS ARE FITTED INCORRECTLY THE DAMAGE WILL ONLY OCCUR WHEN THE WINGS ARE RAISED INTO TRANSPORT POSITION.



#### **Greasing Schedule**

Lubricate moveable mechanical joints when required.

	First 8 hours	16 hours thereafter	80 hours thereafter
PTO Shaft Yoke Ends	•	•	
Roller height adjuster (4x2) - single deck models (12x2) - winged models	•		•
Roller	•		•
Wing pivots (4)	•	•	

#### Rollers

Check the of condition of the roller ends at the end of every season. Roller end shaft must be able to rotate freely and without excessive play. If necessary, remove the roller end and adjust the tightness of the bearings.

#### **Gearbox Oil**

Replace oil in gearboxes after first 100 hours and then every 400 hours thereafter. Use oil which conforms to 80W/90 standards.

## **Troubleshooting**

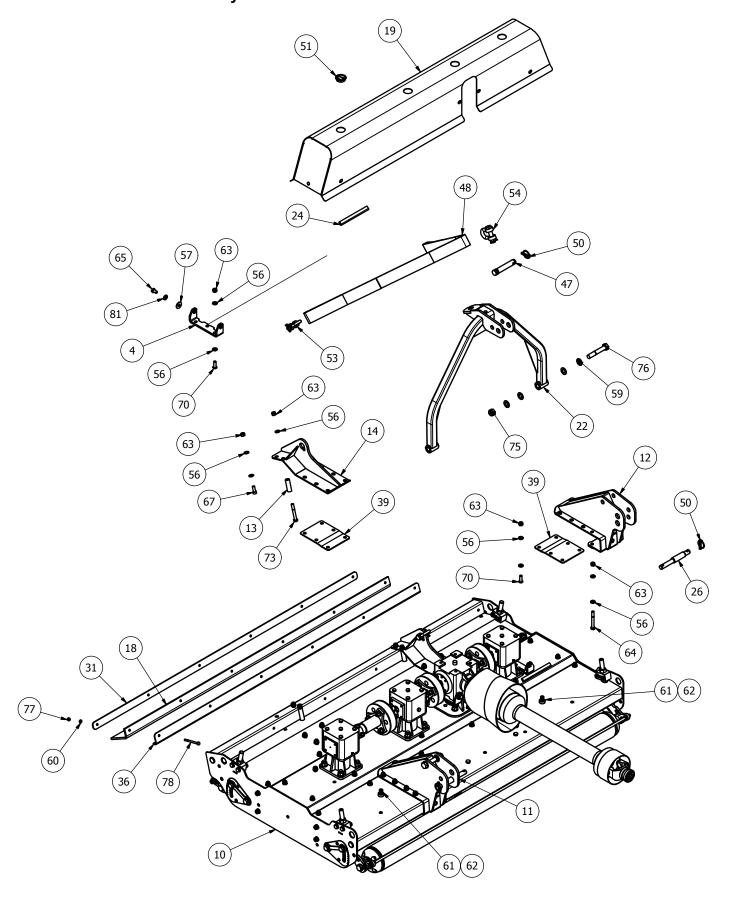
Fault	Cause	Remedy
	Blades dull or bent	Replace blades
	Carrier RPM too low	Use correct PTO speed
Leaves a streak	Field conditions are so wet that the wheels are pushing grass into mud	Too wet to mow. Stop operation and wait until it is drier
of uncut or	Ground speed too fast	Reduce ground speed by shifting to a lower gear
partially cut grass	Grass is down from previous weather conditions	Mow in only one direction
	Possible build-up materials under machine	Clean the machine
	Blades mounted incorrectly (cutting edge against direction rotation)	Change blades so that cutting edge is facing correct rotation
Material discharges from machine unevenly;	Material too high and too much material	Reduce ground speed but maintain recommended rpm at tractor PTO or make two passes over material. Raise machine for the first pass and lower to desired height for the second and cut a 90 degree angle to first pass
bunches of material along with swath	Grass wet	Allow grass to dry before mowing. Slow ground speed of tractor but keep engine running at full PTO rpm. Cutting lower will help
	Low on lubricant	Fill to proper level
Gearbox	Improper type lubricant	Replace with proper lubricant
overheating	Excessive grass/debris build-up around gearbox. PTO running too fast.	Remove grass, etc from machine. Lower the RPM rate
Diada ia asalaisa	Machine too low	Raise machine - reset wheels
Blade is scalping ground	Field is ridged	Cut field at a different angle
ground	Field is too wet	Stop and wait until it is dried
Diadaa waar taa	Cutting in sandy conditions	Increase cutting height
Blades wear too fast	Cutting in rocky conditions	Increase cutting height
	Blades hitting the ground	Increase cutting height
Machine seems	Advancing into grass too rapidly	Reduce forward travel speed
to require	Hitting ground	Raise machine and reset wheels
excessive power	Worn or dull blades	Sharpen or replace blades
	Check gearbox bolts	Tighten if loose
	Check for loose nuts on blades	Tighten if loose
Excessive	Blade broken	Replace blades, in set
vibration	New blade or bolts matched with worn blade or bolts	
	Drivelines not phased correctly. Implement and tractor yokes must be in line	Phase the driveline. Replace if necessary
	Low oil in gearbox	Check level and add oil
	Loose Parts	Check all bolts are fully tightened
	Wrong PTO rpm rate	Check PTO rate & adjust as necessary
Noisy machine	Rotors bent/broken	Replace bent or missing blades
	Bent PTO shaft	Check PTO shaft aligned correctly
	Bent gearbox shaft	Check output shaft on gearboxes are not bent
		Check driveline between gearboxes is aligned

	Damaged oil seal	Replace seal
	Bent shaft	Replace oil seal and shaft
	Shaft rough in oil seal area	Replace or repair shaft
	Oil seal installed incorrectly	Replace seal
Gearbox leaking	Oil seal not sealing in the housing	Replace seal or use a sealant on outside diameter of seal
	Oil level too high	Drain oil to proper level
	Hole in gearbox	Replace the gearbox
	Gasket damaged	Replace gasket
	Bolts loose	Tighten bolts

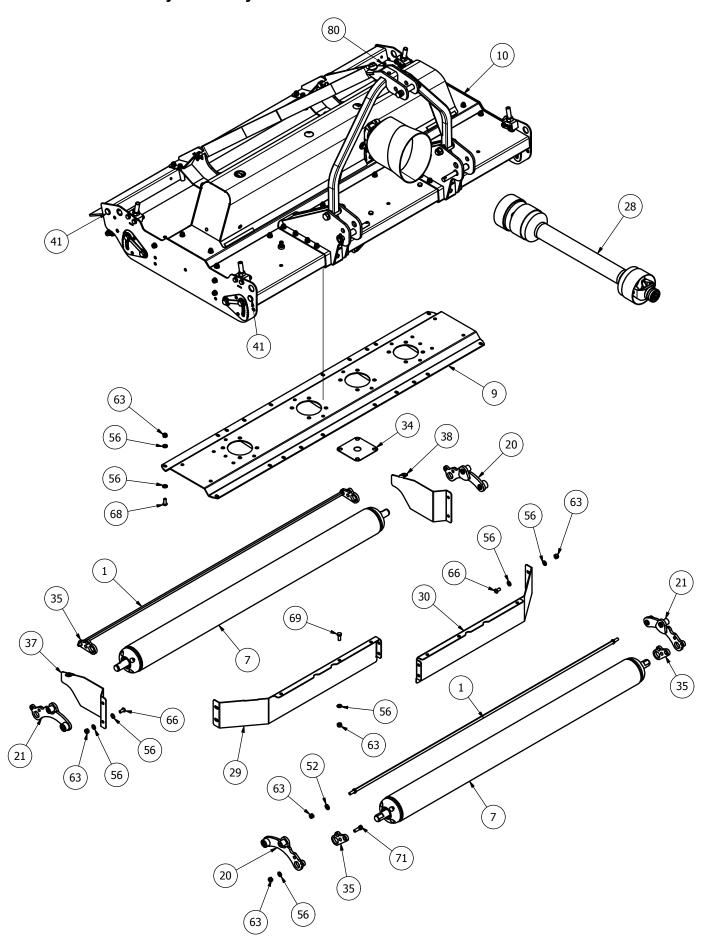
# MJ70 Spare Parts Single Deck models

MJ70-190, MJ70-240 MJ70-190FM, MJ70-240FM

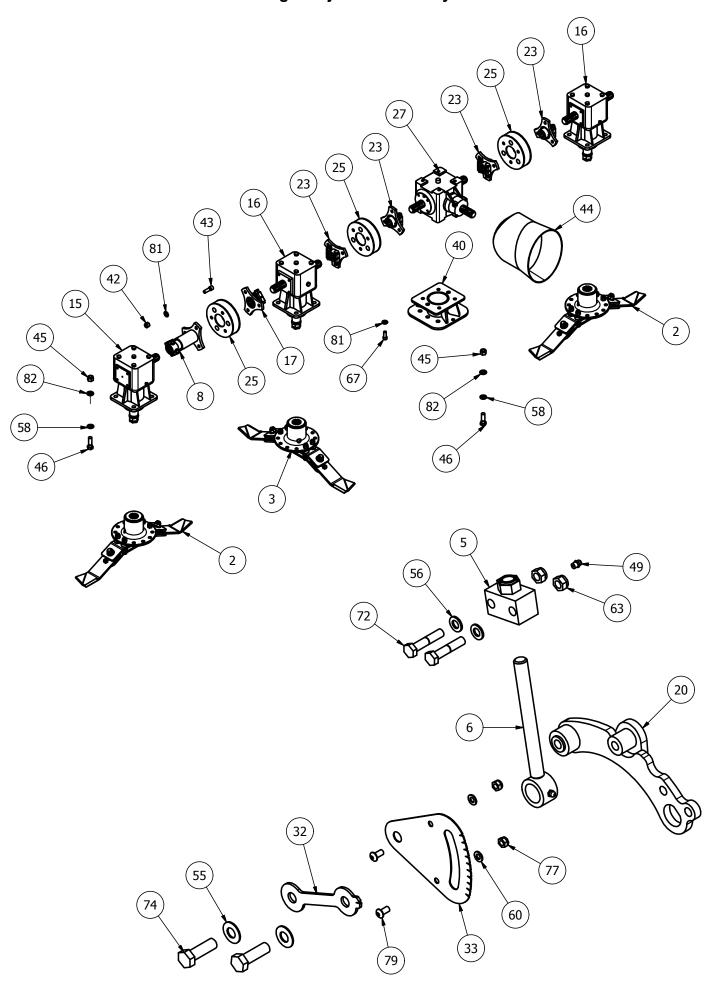
# MJ70-190 - General Assembly



MJ70-190 - Underbody Assembly



MJ70-190 - Drivetrain and Roller Height Asjuster Assembly



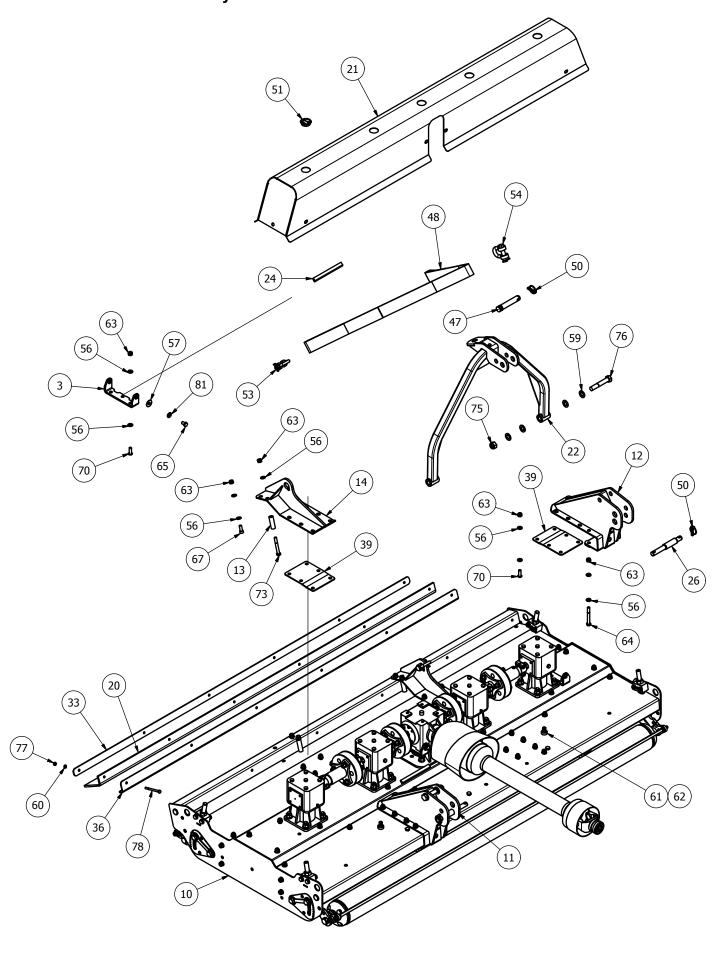
#### **MJ70-190 - Parts List**

ltem	Part No.	Description	Qty
1	6300RM-SCRPR-01	6300 SCRAPER BAR	2
2	725-BLD-FL	725 FIXED BLADE (Anti_Clk)	2
3	725-BLD-FR	725 FIXED BLADE (Clk)	1
4	8400RM-CV14	GUARD BASE MOUNT	4
5	8400RM-HG55	M20 ADJUSTER BLOCK	4
6	8400RM-HG65	M20 THREADED ADJUSTER	4
7	GM63-ROL	6300 ROLLER	2
8	GM84-55L	8400 DRIVE TUBE (LONG)	1
9	MJ70-190-GBR18	UNDERSIDE TROUGH	1
10	SW-190-BD01	MJ70-190 BODY	1
11	SW-240-LM01	LINKAGE MOUNT (REAR)	1
12	SW-240-LM01H	LINKAGE MOUNT (REAR)	1
13	SW-240-LM08	SPACER TUBE	4
14	SW-240-SM10	STRAP MOUNT (REAR)	
15	205872	6 SPLINE 'L' BOX RATIO 1.92	1
16	205874	6 SPLINE 'T' BOX RATIO 1.92	
17	60CSD	60mm STAR DRIVE	
18	6300RM3-CV22	RUBBER FLAP	1
19	6300RM3-CVR	MJ70-190 GBOX REAR COVER	
20	8400RM-RPV01	ROLLER PIVOT	2
21	8400RM-RPV10	ROLLER PIVOT	2
22	GM2	STANDARD A-FRAME	1
23	GM84-DRV	6 SPLINE STAR DRIVE	4
24	LS002	ANTI VIBRATION RUBBER	6
25	MJRC-113	113 PCD RUBBER COUPLING	3
26	S15707	CAT 1/2 LINK PIN	2
27	T27A267245	6 SPLINE 'T' BOX RATIO 1:1.92	1
28	T500810ENC12RW6	FIXED SLIP CLUTCH 1200 Nm	1
29	6300RM-AF02	AERO-FOIL (6300)	1
30	6300RM-AF02H	AERO-FOIL (6300)	1
31	6300RM3-CV23	RUBBER CLAMP	1
32	8400RM-HG03	HEIGHT INDICATOR	4
33	8400RM-HG04	HEIGHT GUIDE	4
34	MJ70-240-GBR21	CENTER BOX BLANK	1
35	SCRPR-SQ12-01	SCRAPER MOUNT	4
36	SW-190-DF01	RUBBER CLAMP	1
37	SW-240-DF02	REAR DEFLECTOR	1
38	SW-240-DF02H	REAR DEFLECTOR	1
39	SW-240-LM09	SUPPORT PLATE	4
40	2000CM-GBM01	CENTER BOX MOUNT	1
41	111044	DIA 26-30mm INSERT	8
42	12HEX109	1/2F HEX 10.9	18
43	12x112FSKS	1/2"x1 1/2" FINE SOCKET HEAD 12.9	18
44	190.000.545	PTO GUARD (EXTENDED OVAL)	1
45	5/8F	5/8" FINE NYLOC NUT	16
46	58x2FBZP	5/8"x2" FINE BOLT	16
47	81	CAT 2 PIN DIA 25.4x110mm	1
48	8400STR	8400RM MKII STRAP (2000mm)	1
40			
	851	GREASE NIPPLE M8v1 25 STR	Я
49	851 AN099/10	GREASE NIPPLE M8x1.25 STR LINCH PIN DIA 9.5	- 8 - 3

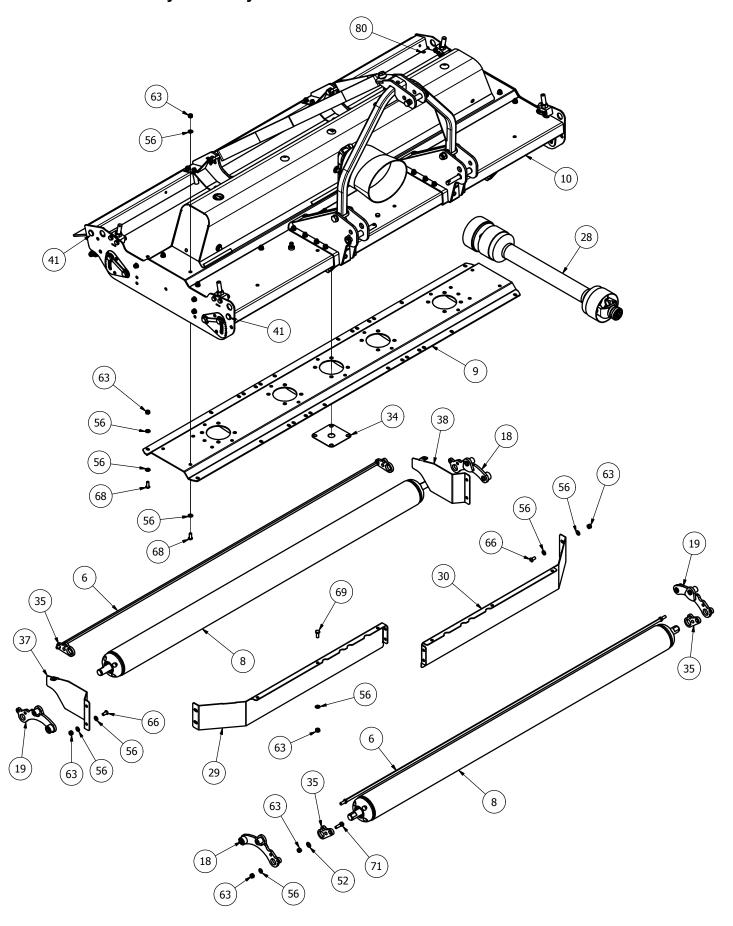
52	D281215	DISC SPRING 28x12x1.5	4
53	DSR-1-2	1/2" RATED 'D' SHACKLE	2
54	DSR-5-8	5/8" RATED 'D' SHACKLE	1
55	DSW34	DISC SPRING 34x16.3 x2	8
56	FWM12	M12 FLAT WASHER	160
57	FWM12L	M12 FLAT WASHER (LARGE)	8
58	FWM16	M16 FLAT WASHER	16
59	FWM20	M20 FLAT WASHER	8
60	FWM8	M8 FLAT WASHER	22
61	G1106	BRASS TAP CONNECTOR	2
62	I-257	3/4x1/2 REDUCER BUSH	2
63	M12	M12 NYLOC NUT	98
64	M12x100BZP	M12x100 BOLT	4
65	M12x20SZP	M12x20 SET BOLT	8
66	M12x25SKBH	M12x25 SOCKET BUTTON HEAD 10.9	8
67	M12x30SK	M12x30 SOCKET HEAD SCREW	8
68	M12x30SKBH	M12x30 SOCKET BUTTON HEAD 10.9	22
69	M12x30SZP	M12x30 SET BOLT	8
70	M12x35SKBH	M12x35 SOCKET BUTTON HEAD 10.9	32
71	M12x40BZP	M12x40 BOLT	4
72	M12x60BZP	M12x60 BOLT	8
73	M12x90BZP	M12x90 BOLT	4
74	M16x50SZP	M16x50 SET BOLT	8
75	M20	M20 NYLOC NUT	2
76	M20x120BZP	M20x120 BOLT	2
77	M8	M8 NYLOC NUT	16
78	M8x100BZP	M8x100 BOLT	6
79	M8x16SKBH	M8x16 SOCKET BUTTON HEAD 10.9	8
80	M8x20SKBH	M8x20 SOCKET BUTTON HEAD 10.9	2
81	NL12SP	M12 SP NORDLOCK	28
82	NL16SP	M16 SP NORDLOCK	16

19

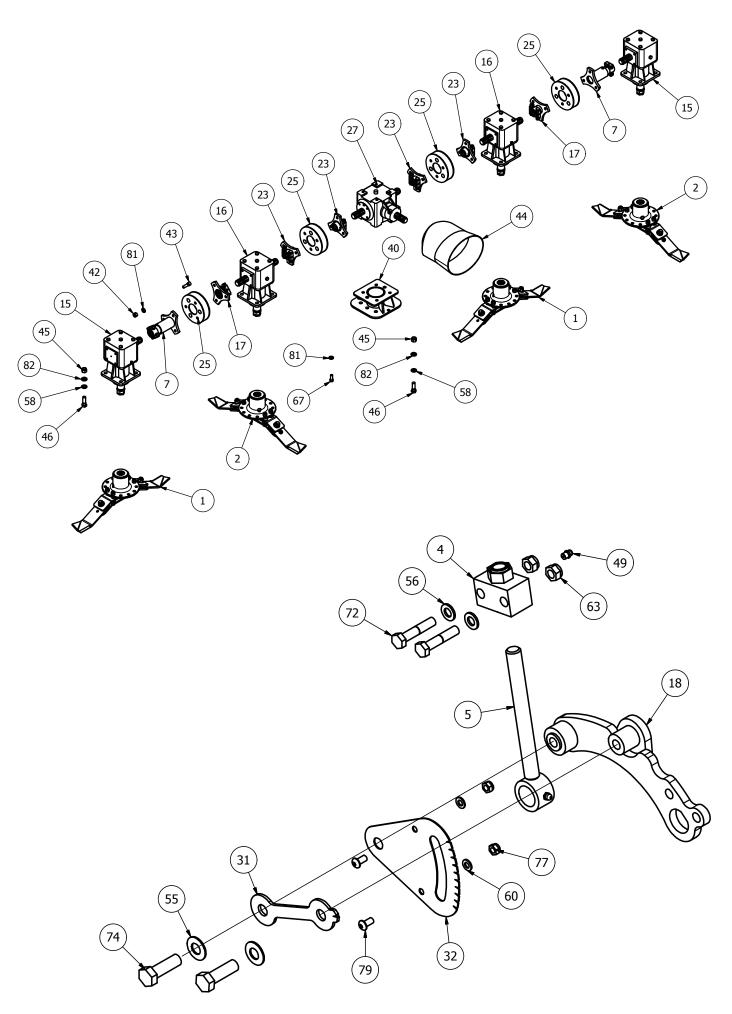
MJ70-240 - General Assembly



MJ70-240 - Underbody Assembly



MJ70-240 - Drivetrain and Roller Height Asjuster Assembly

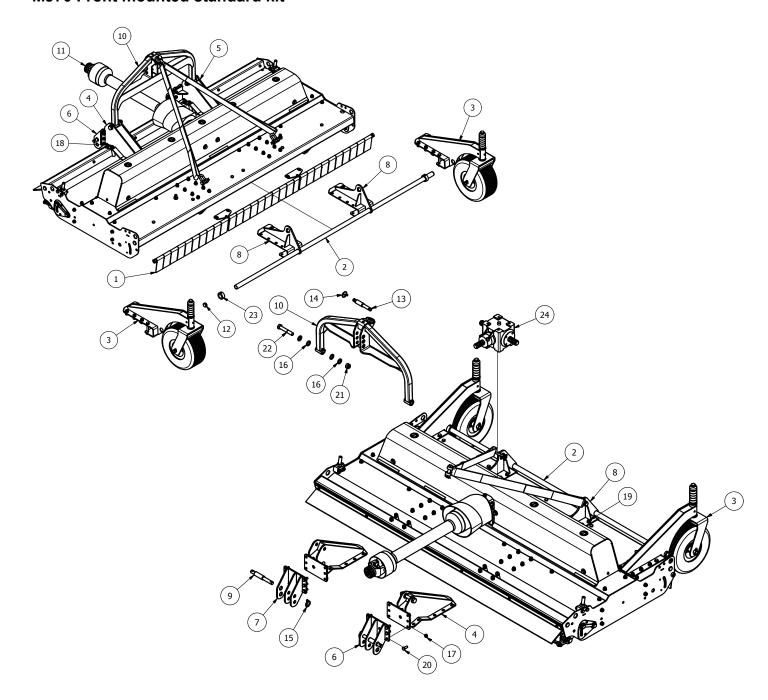


#### MJ70-240 - Parts List

ltem	Part No.	Description	Qty
1	725-BLD-FL	725 FIXED BLADE (Anti_Clk)	2
2	725-BLD-FR	725 FIXED BLADE (CIk)	
3	8400RM-CV14	GUARD BASE MOUNT	4
4	8400RM-HG55	M20 ADJUSTER BLOCK	4
5	8400RM-HG65	M20 THREADED ADJUSTER	4
6	8400RM-SCRPR-01	8400 SCRAPER BAR	2
7	GM84-55L	8400 DRIVE TUBE (LONG)	2
8	GM84-ROL	8400 ROLLER	2
			1
9	MJ70-240-GBR18	UNDERSIDE TROUGH	
10	SW-240-BD01	MJ70-240 BODY	1
11	SW-240-LM01	LINKAGE MOUNT (REAR)	1
12	SW-240-LM01H	LINKAGE MOUNT (REAR)	1
13	SW-240-LM08	SPACER TUBE	4
14	SW-240-SM10	STRAP MOUNT (REAR)	2
15	205872	6 SPLINE 'L' BOX RATIO 1.92	2
16	205874	6 SPLINE 'T' BOX RATIO 1.92	2
17	60CSD	60mm STAR DRIVE	2
18	8400RM-RPV01	ROLLER PIVOT	2
19	8400RM-RPV10	ROLLER PIVOT	2
20	8400RM3-CV22	RUBBER FLAP	1
21	8400RM3-CVR	8400 GEARBOX COVER MK3	1
22	GM2	STANDARD A-FRAME	1
23	GM84-DRV	6 SPLINE STAR DRIVE	4
24	LS002	ANTI VIBRATION RUBBER	7
25	MJRC-113	113 PCD RUBBER COUPLING	4
26	S15707	CAT 1/2 LINK PIN	2
27	T27A267245	6 SPLINE 'T' BOX RATIO 1:1.92	1
28	T500810ENC12RW6	FIXED SLIP CLUTCH 1200 Nm	1
29	8400RM-AF03	AERO-FOIL (8400)	1
30	8400RM-AF03H	AERO-FOIL (8400)	1
31	8400RM-HG03	HEIGHT INDICATOR	4
32	8400RM-HG04	HEIGHT GUIDE	4
33	8400RM3-CV23	RUBBER CLAMP	1
34	MJ70-240-GBR21	CENTER BOX BLANK	1
35	SCRPR-SQ12-01	SCRAPER MOUNT	4
36	SW-240-DF01	RUBBER CLAMP	1
37	SW-240-DF02	REAR DEFLECTOR	1
38	SW-240-DF02H	REAR DEFLECTOR	1
39	SW-240-LM09	SUPPORT PLATE	4
40	2000CM-GBM01	CENTER BOX MOUNT	1
41	111044	DIA 26-30mm INSERT	8
42	12HEX109	1/2F HEX 10.9	24
43	12x112FSKS	1/2"x1 1/2" FINE SOCKET HEAD	24
44	190.000.545	12.9 PTO GUARD (EXTENDED OVAL)	1
45	5/8F	5/8" FINE NYLOC NUT	20
46	58x2FBZP	5/8"x2" FINE BOLT	20
47	81	CAT 2 PIN DIA 25.4x110mm	1

48	8400STR	8400RM MKII STRAP (2000mm)	1
49	851	GREASE NIPPLE M8x1.25 STR	8
50	AN099/10	LINCH PIN DIA 9.5	3
51	CP176-181MG1	45mm INSERT	5
52	D281215	DISC SPRING 28x12x1.5	4
53	DSR-1-2	1/2" RATED 'D' SHACKLE	2
54	DSR-5-8	5/8" RATED 'D' SHACKLE	1
55	DSW34	DISC SPRING 34x16.3 x2	8
56	FWM12	M12 FLAT WASHER	165
57	FWM12L	M12 FLAT WASHER (LARGE)	8
58	FWM16	M16 FLAT WASHER	20
59	FWM20	M20 FLAT WASHER	8
60	FWM8	M8 FLAT WASHER	22
61	G1106	BRASS TAP CONNECTOR	2
62	I-257	3/4x1/2 REDUCER BUSH	2
63	M12	M12 NYLOC NUT	101
64	M12x100BZP	M12x100 BOLT	4
65	M12x20SZP	M12x20 SET BOLT	8
66	M12x25SKBH	M12x25 SOCKET BUTTON HEAD 10.9	8
67	M12x30SK	M12x30 SOCKET HEAD SCREW	8
68	M12x30SKBH	M12x30 SOCKET BUTTON HEAD 10.9	24
69	M12x30SZP	M12x30 SET BOLT	8
70	M12x35SKBH	M12x35 SOCKET BUTTON HEAD 10.9	32
71	M12x40BZP	M12x40 BOLT	4
72	M12x60BZP	M12x60 BOLT	8
73	M12x90BZP	M12x90 BOLT	4
74	M16x50SZP	M16x50 SET BOLT	8
75	M20	M20 NYLOC NUT	2
76	M20x120BZP	M20x120 BOLT	2
77	M8	M8 NYLOC NUT	16
78	M8x100BZP	M8x100 BOLT	6
79	M8x16SKBH	M8x16 SOCKET BUTTON HEAD 10.9	8
80	M8x20SKBH	M8x20 SOCKET BUTTON HEAD 10.9	2
81	NL12SP	M12 SP NORDLOCK	36
82	NL16SP	M16 SP NORDLOCK	20

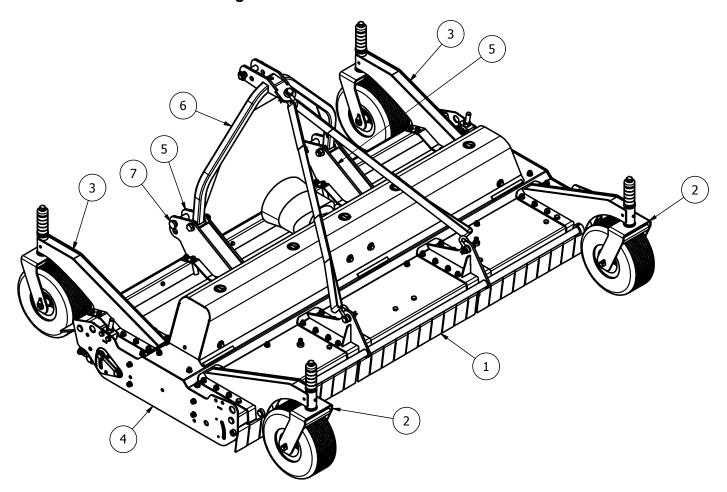
## MJ70 Front mounted standard kit



Item	Part No.	Description	Qty
1	MJ70-240-FMGF-GA	FLAP GUARD (8400)	1
2	MJ70-240-FMGF15	GUARD TUBE	1
3	MJ70-CW-SW01	SWIFT CASTOR (FRONT)	2
4	SW-190-FLM01	LINKAGE MOUNT (FRONT)	1
5	SW-190-FLM01H	LINKAGE MOUNT (FRONT)	1
6	SW-190-FLPM01	LINK PIN MOUNT	1
7	SW-190-FLPM01H	LINK PIN MOUNT	1
8	SW-240-SM20	STRAP MOUNT (FRONT)	2
9	S15707	CAT 1/2 LINK PIN	2
10	SW-FM-C12	SWIFT A FRAME CAT 1-2	1
11	V600810ENC12RB2	V60 SHEARBOLT / OR	1
12	111044	DIA 26-30mm INSERT	10
13	3234	CAT 1/2 TOP LINK PIN	1

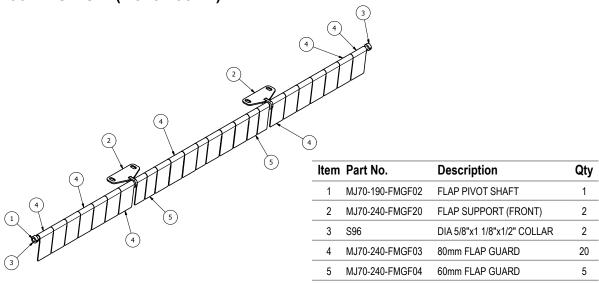
14	37	LINCH PIN DIA 6	1
15	AN099/10	LINCH PIN DIA 9.5	2
16	FWM20	M20 FLAT WASHER	8
17	M12	M12 NYLOC NUT	105
18	M12x100BZP	M12x100 BOLT	4
19	M12x110BZP	M12x110 BOLT	4
20	M12x30SZP	M12x30 SET BOLT	20
21	M20	M20 NYLOC NUT	2
22	M20x120BZP	M20x120 BOLT	2
23	S4444	DIA 1 3/8"x2 1/8"x7/8" COLLAR	2
24	T27A267006	6 SPLINE 'T' BOX RATIO 1.1	1

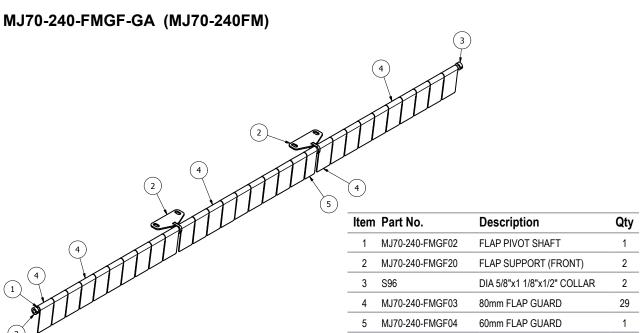
# MJ70 Front mounted Multihog kit



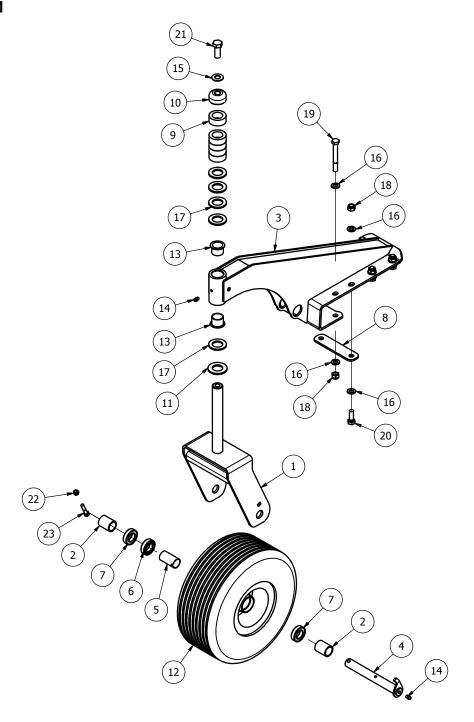
Item	Part No.	Description	Qty
1	MJ70-240-FMGF-GA	FLAP GUARD (8400)	1
2	MJ70-CW-SW01	SWIFT CASTOR (FRONT)	2
3	MJ70-CW-SW30	SWIFT CASTOR (REAR)	2
4	SW-240-BD01	MJ70-240 BODY	1
5	SW-240-LM20	LINKAGE MOUNT (FRONT)	2
6	909-AF-01	909 A-FRAME 2011	1
7	9162	CAT 2 PIN DIA 28.5x113mm	2

#### MJ70-190-FMGF-GA (MJ70-190FM)





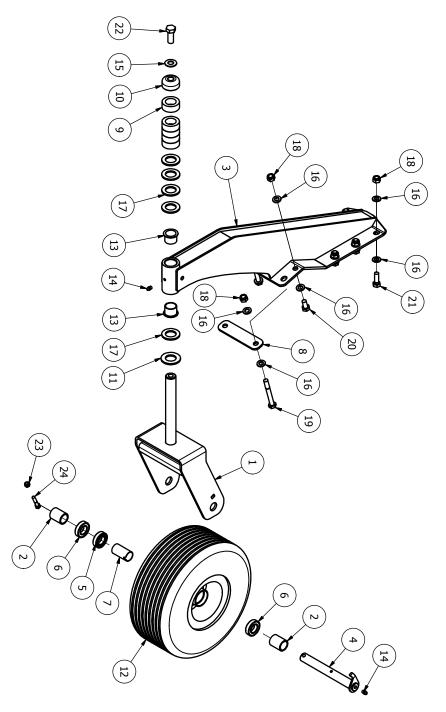
#### MJ70-CW-SW01



Item	Part No.	Description	Qty
1	MJ70-CW-020	MJ70 CASTOR YOKE	1
2	MJ70-CW-025	CASTOR SPACER	2
3	MJ70-CW-SW02	SWIFT CASTOR STAND	1
4	RMCW-030	CASTOR AXLE	1
5	RMCW-033	BEARING SPACER TUBE	1
6	6005	47x25x12 DEEP GROOVE	1
7	6005RS	47x25x12 DEEP GROOVE	2
8	8400RM3-LM15	LINKAGE SUPPORT (FRONT)	1
9	RM2-L019	HEIGHT ADJUSTOR NYLON	5
10	RM2-L020	CASTOR TOP	1
11	0051300000VR	NYLON WASHER 56x31x4	1
12	15x6-00-6	WHEEL 364x151mmx 6 PLY (TUBE)	1

13	3026DU	30x34x26 FLANGE BUSH	2
14	851	GREASE NIPPLE M8x1.25 STR	2
15	DSW34	DISC SPRING 34x16.3 x2	1
16	FWM12	M12 FLAT WASHER	16
17	FWM30	M30 FLAT WASHER	5
18	M12	M12 NYLOC NUT	8
19	M12x100BZP	M12x100 BOLT	2
20	M12x35BZP	M12x35 BOLT	6
21	M16x40SZP	M16x40 SET BOLT	1
22	M8	M8 NYLOC NUT	1
23	M8x40BZP	M8x40 BOLT	1

#### MJ70-CW-SW30

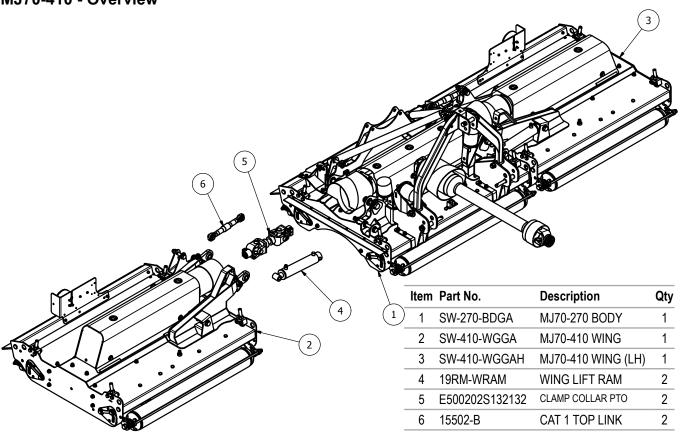


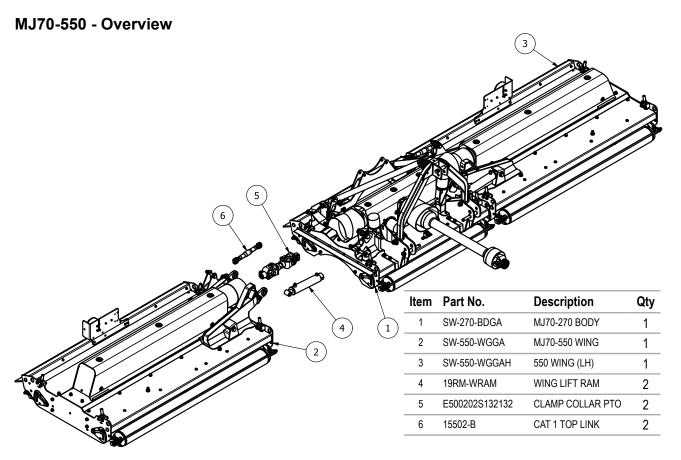
Item	Part No.	Description	Qty
1	MJ70-CW-020	MJ70 CASTOR YOKE	1
2	MJ70-CW-025	CASTOR SPACER	2
3	MJ70-CW-SW31	SWIFT CASTOR STAND	1
4	RMCW-030	CASTOR AXLE	1
5	6005	47x25x12 DEEP GROOVE	1
6	6005RS	47x25x12 DEEP GROOVE	2
7	RMCW-033	BEARING SPACER TUBE	1
8	8400RM3-LM15	LINKAGE SUPPORT (FRONT)	1
9	RM2-L019	HEIGHT ADJUSTOR NYLON	5
10	RM2-L020	CASTOR TOP	1
11	0051300000VR	NYLON WASHER 56x31x4	1
12	15x6-00-6	WHEEL 364x151mmx 6 PLY (TUBE)	1
13	3026DU	30x34x26 FLANGE BUSH	2

14	851	GREASE NIPPLE M8x1.25 STR	2
15	DSW34	DISC SPRING 34x16.3 x2	1
16	FWM12	M12 FLAT WASHER	20
17	FWM30	M30 FLAT WASHER	5
18	M12	M12 NYLOC NUT	10
19	M12x100BZP	M12x100 BOLT	2
20	M12x25SZP	M12x25 SET BOLT	2
21	M12x35BZP	M12x35 BOLT	6
22	M16x40SZP	M16x40 SET BOLT	1
23	M8	M8 NYLOC NUT	1
24	M8x40BZP	M8x40 BOLT	1

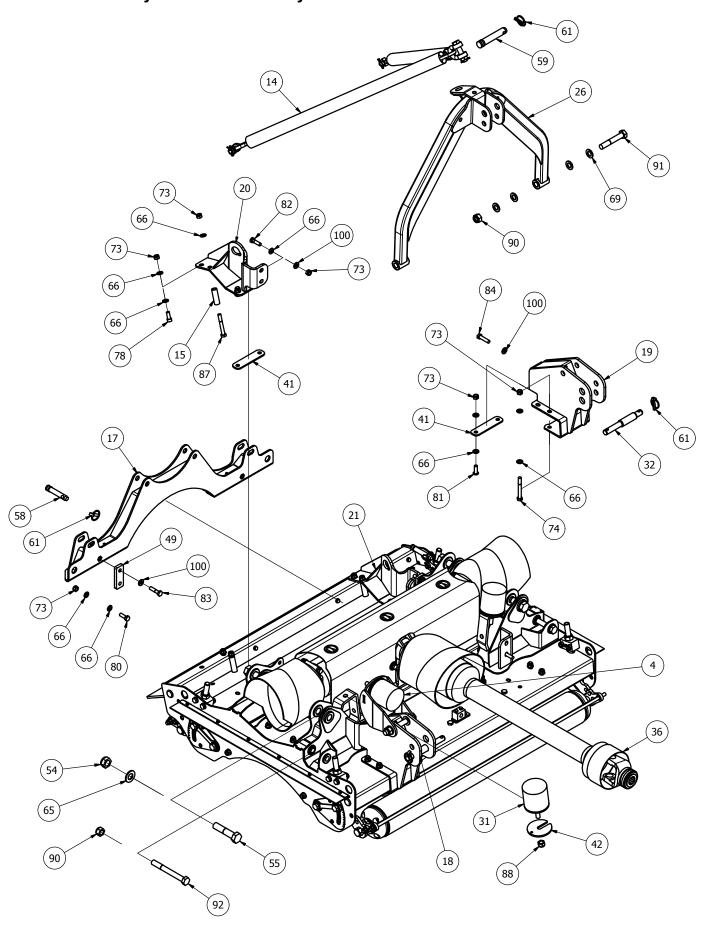
# MJ70 Winged models MJ70-320, MJ70-410, MJ70-550 MJ70-320FM, MJ70-410FM MJ70-410T, MJ70-550T

MJ70-410 - Overview

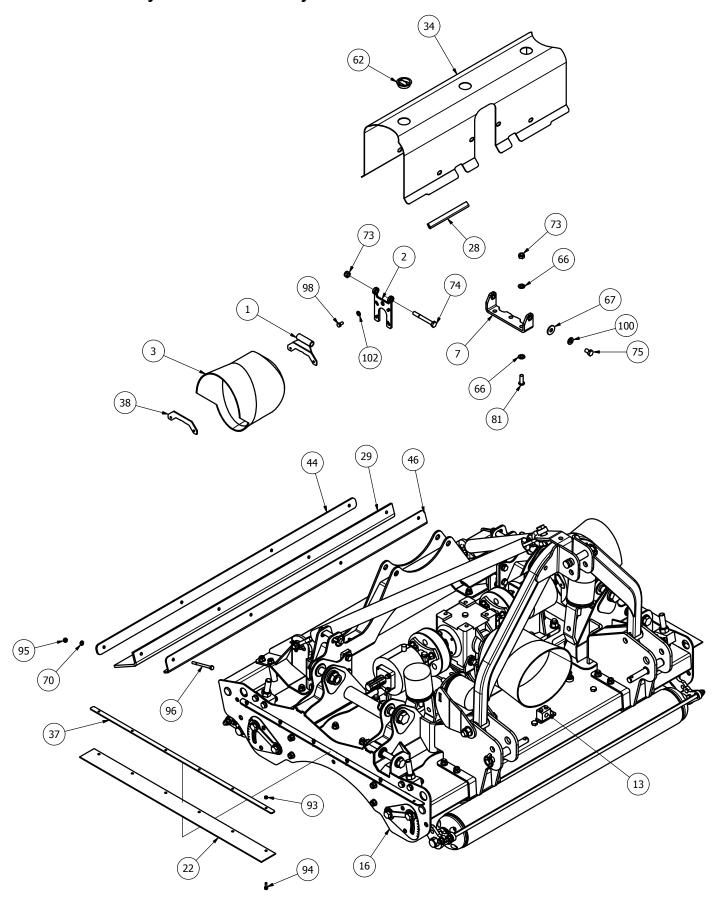




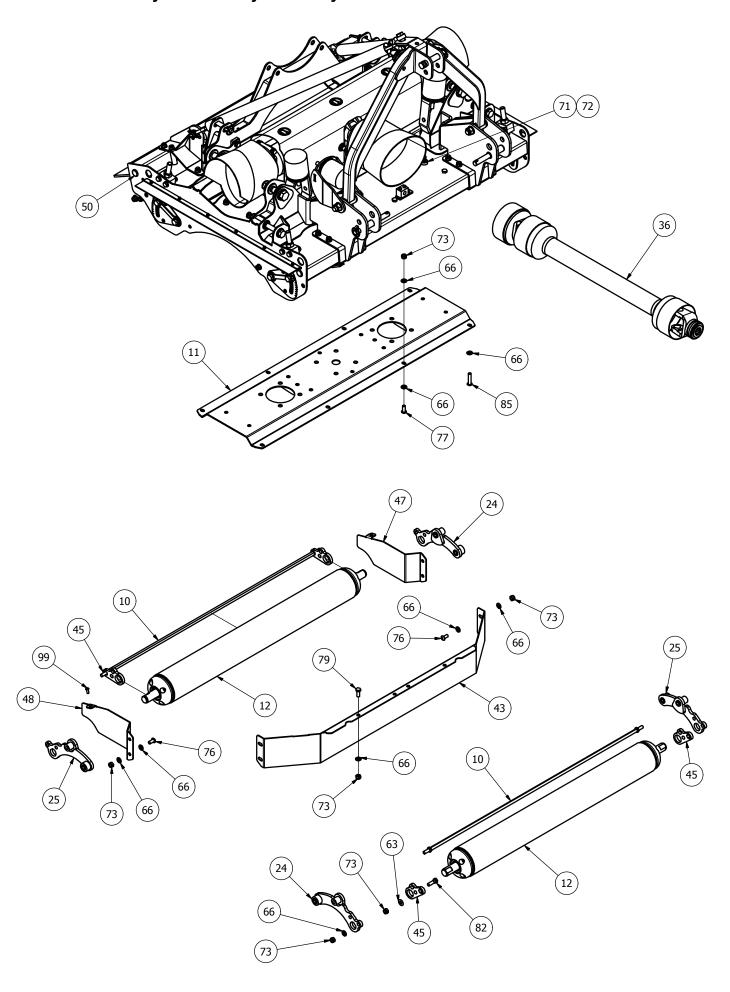
## MJ70-410/550 Body - General Assembly



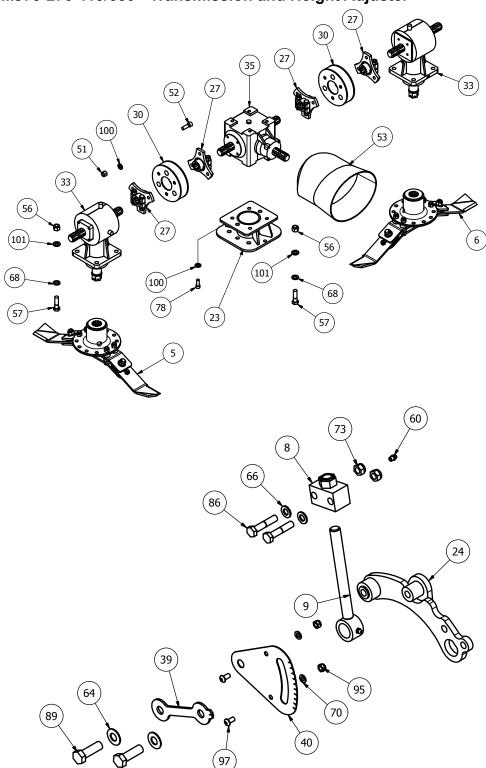
# MJ70-410/550 Body - General Assembly



# MJ70-410/550 Body - Underbody Assembly



# MJ70-270 410/550 - Transmission and Height Adjuster



# MJ70-410/550 Body - Parts List

Item	Part No.	Description	Qty
1	11RM-C10	COVER PIVOT	2
2	11RM-C11	COVER PIVOT	2
3	11RM-C16	MODIFIED OVAL GUARD	2
4	3000T-AFBGA	A' FRAME BUFFER	1
5	725-BLD-FL	725 FIXED BLADE (Anti_Clk)	1
6	725-BLD-FR	725 FIXED BLADE (Clk)	1
7	8400RM-CV14	GUARD BASE MOUNT	4

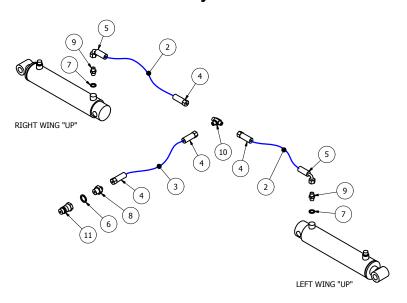
8	8400RM-HG55	M20 ADJUSTER BLOCK	4
9	8400RM-HG65	M20 THREADED ADJUSTER	4
10	MJ70-270- BSCRPR-01	MJ70-270 BODY SCRAPER BAR	2
11	MJ70-270-GBR01	UNDERSIDE TROUGH	1
12	MJ70-270-ROLB	MJ70-270 BODY ROLLER	2
13	MJ70-320-HYD05	HYDRAULIC BLOCK	3
14	MJ70-320-STRP01	SWIFT CHAIN SLING	1

# MJ70-410/550 - Parts List (continued)

		i arts Eist (continue	,
15	SW-240-LM08	SPACER TUBE	4
16	SW-270-BD01	MJ70-270 BODY	1
17	SW-270-HT01	HINGE TIE	1
18	SW-270-LM01	LINKAGE MOUNT	1
19	SW-270-LM01H	LINKAGE MOUNT	1
20	SW-270-SM01	270 STRAP MOUNT	1
21	SW-270-SM01H	270 STRAP MOUNT	1
22	11000RM2-CV40	EDGE RUBBER	2
23	2000CM-GBM01	CENTER BOX MOUNT	1
24	8400RM-RPV01	ROLLER PIVOT	2
25	8400RM-RPV10	ROLLER PIVOT	2
26	GM3	STANDARD A-FRAME	1
27	GM84-DRV	6 SPLINE STAR DRIVE	4
28	LS002	ANTI VIBRATION RUBBER	4
29	MJ70-270-CV54	RUBBER FLAP	1
30	MJRC-113	113 PCD RUBBER COUPLING	2
31	MOT10	DIA 100x100 BUFFER	2
32	S15707	CAT 1/2 LINK PIN	2
33	S3035230012	6 SPLINE 'T' BOX RATIO 2.3	2
34	SW-270-CV01	MJ70-270 BODY COVER	1
35	T27A267245	6 SPLINE 'T' BOX RATIO 1:1.92	1
36	V600910ENC12RW6	V60 FIXED SLIP CLUTCH	1
37	11000RM2-CV41	EDGE RUBBER CLAMP	2
38	11RM-C14	COVER MOUNT	2
39	8400RM-HG03	HEIGHT INDICATOR	4
40	8400RM-HG04	HEIGHT GUIDE	4
41	8400RM3-LM15	LINKAGE SUPPORT (FRONT)	4
42	8T19	BUFFER SPACER	2
43	MJ70-270-AF05	AERO-FOIL (BODY)	1
44	MJ70-270-CV53	BODY RUBBER CLAMP	1
45	SCRPR-SQ12-01	SCRAPER MOUNT	4
46	SW-270-DF03	RUBBER CLAMP	1
47	SW-270-DF04	REAR DEFLECTOR	1
48	SW-270-DF04H	REAR DEFLECTOR	1
49	SW-270-HT05	BOLT PLATE	2
50	111044	DIA 26-30mm INSERT	8
51	12HEX109	1/2F HEX 10.9	12
52	12x112FSKS	1/2"x1 1/2" FINE SOCKET HEAD 12.9	12
53	190.000.545	PTO GUARD (EXTENDED OVAL)	1
54	1UNF	1" FINE NYLOC (1/2 NUT)	4
55	1x412FBZP	1"x4 1/2" FINE BOLT	4
56	5/8F	5/8" FINE NYLOC NUT	12
57	58x214FBZP	5/8"x2 1/4" FINE BOLT	12
58	73	CAT 1 PIN DIA 19x76mm	2
59	81	CAT 2 PIN DIA 25.4x110mm	1
60	851	GREASE NIPPLE M8x1.25 STR	8
61	AN099/10	LINCH PIN DIA 9.5	5
62	CP176-181MG1	45mm INSERT	3

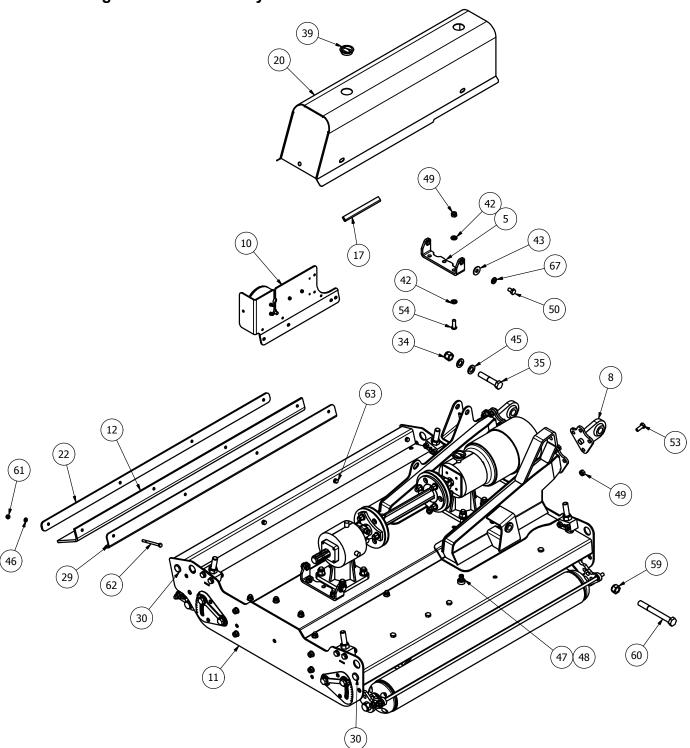
63	D281215	DISC SPRING 28x12x1.5	4
64	DSW34	DISC SPRING 34x16.3 x2	8
65	FW1	DIA 1" FLAT WASHER	4
66	FWM12	M12 FLAT WASHER	108
67	FWM12L	M12 FLAT WASHER (LARGE)	8
68	FWM16	M16 FLAT WASHER	12
69	FWM20	M20 FLAT WASHER	6
70	FWM8	M8 FLAT WASHER	18
71	G1106	BRASS TAP CONNECTOR	2
72	I-257	3/4x1/2 REDUCER BUSH	2
73	M12	M12 NYLOC NUT	72
74	M12x100BZP	M12x100 BOLT	6
75	M12x20SZP	M12x20 SET BOLT	8
76	M12x25SKBH	M12x25 SOCKET BUTTON HEAD 10.9	8
77	M12x30SKBH	M12x30 SOCKET BUTTON HEAD 10.9	10
78	M12x30SKS	M12x30 SOCKET HEAD SCREW	8
79	M12x30SZP	M12x30 SET BOLT	4
80	M12x35BZP	M12x35 BOLT	2
81	M12x35SKBH	M12x35 SOCKET BUTTON HEAD 10.9	14
82	M12x40BZP	M12x40 BOLT	8
83	M12x50BZP	M12x50 BOLT	2
84	M12x50SZP	M12x50 SET BOLT	4
85	M12x55SKBH	M12x55 SOCKET BUTTON HEAD 10.9	4
86	M12x60BZP	M12x60 BOLT	8
87	M12x90BZP	M12x90 BOLT	4
88	M16	M16 NYLOC NUT	2
89	M16x50SZP	M16x50 SET BOLT	8
90	M20	M20 NYLOC NUT	3
91	M20x120BZP	M20x120 BOLT	1
92	M20x180BZP109	M20x180 BOLT (10.9)	2
93	M6	M6 NYLOC NUT	12
94	M6x20SZP	M6x20 SET BOLT	12
95	M8	M8 NYLOC NUT	14
96	M8x100BZP	M8x100 BOLT	4
97	M8x16SKBH	M8x16 SOCKET BUTTON HEAD 10.9	8
98	M8x16SZP	M8x16 SET BOLT	8
99	M8x20SKBH	M8x20 SOCKET BUTTON HEAD 10.9	2
100	NL12SP	M12 SP NORDLOCK	34
101	NL16SP	M16 SP NORDLOCK	12
102	NL8SP	M8 SP NORDLOCK	8

# MJ70-410/550/410FM- Hydraulics

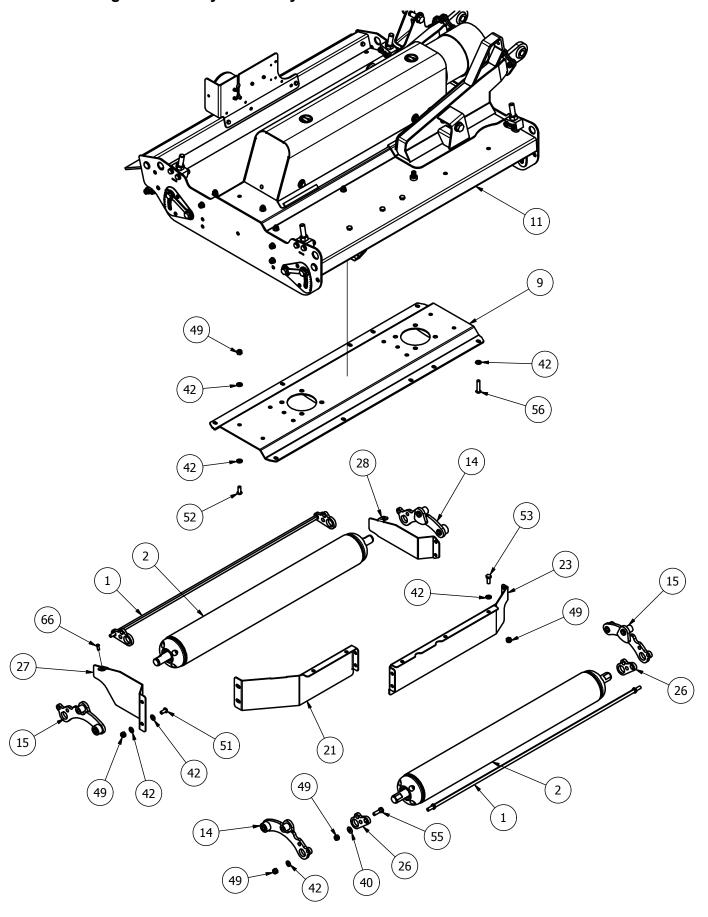


Item	Part No.	Description	Qty
1	19RM-WRAM	WING LIFT RAM	2
2	270-HOSE A	1/4"x 860mm Str to Block 90	2
3	270-HOSE-B	1/4"x 2440mm Str to Str	1
4	CRP1400	1/4" CRIMP (STRAIGHT)	4
5	CRP1490	1/4" CRIMP SWEPT (90 Deg)	2
6	EDOW12	1/2" DOWTY WASHER	1
7	EDOW14	1/4" DOWTY WASHER	2
8	EMM12-14	1/2-14" M/M CONNECTOR	1
9	EMM14RV	1/4" M/M RESTRICTOR (DIA 1mm)	2
10	EMMMT14	1/4" M/M/M CONNECTOR	1
11	QRM12	1/2" QUICK RELEASE MALE	1

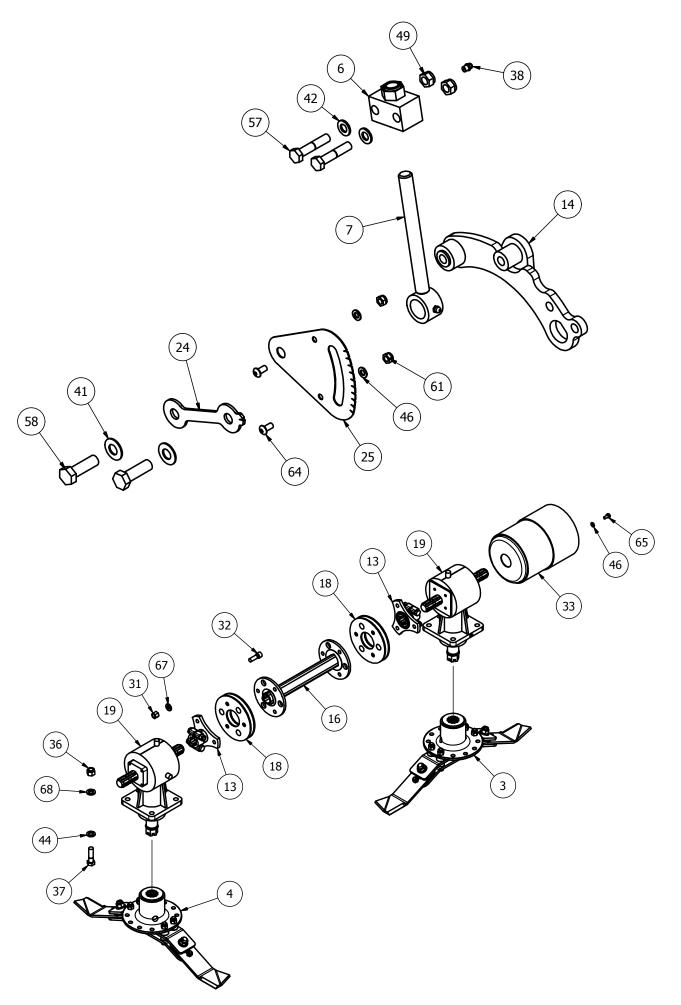
# MJ70-410 Wing - General Assembly



# MJ70-410 Wing - Underbody Assembly



# MJ70-410 Wing - Height Adjuster and Transmission

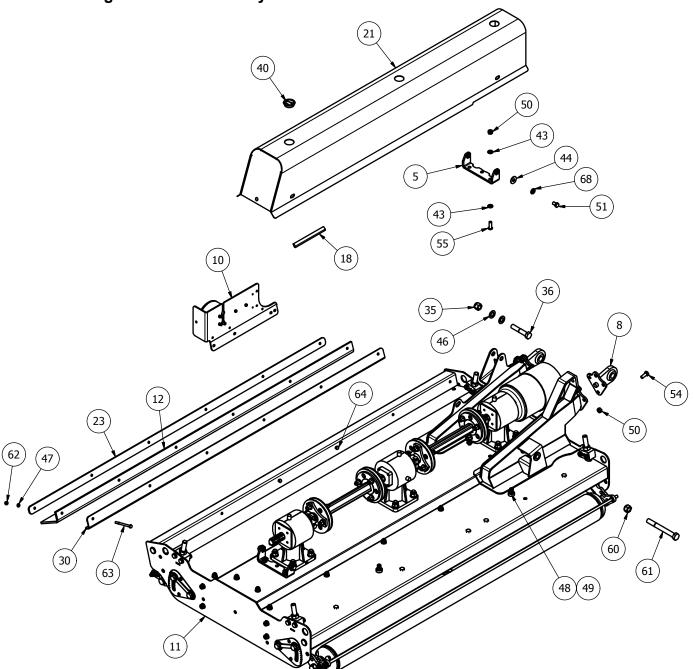


# MJ70-410 Wing - Parts List

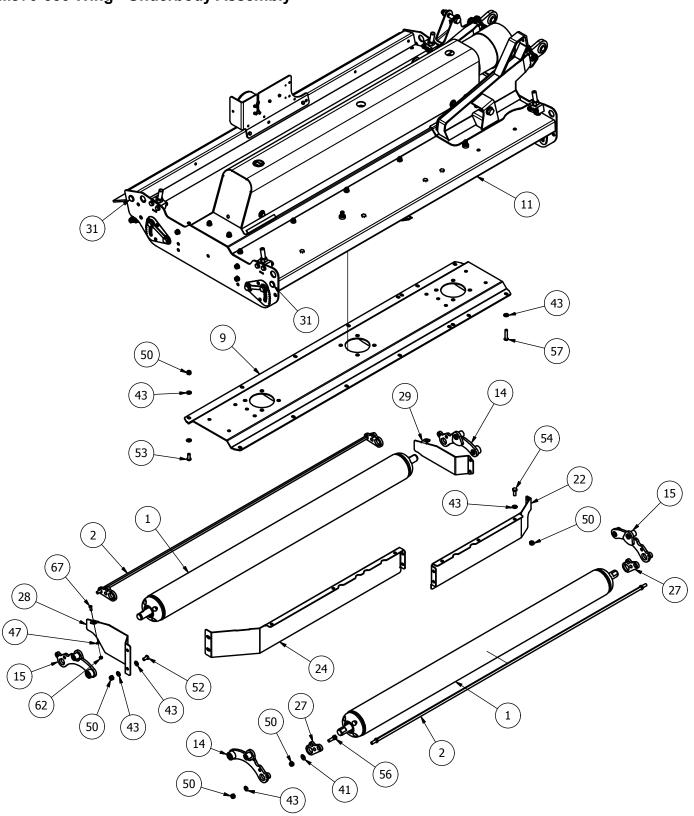
ltem	Part No.	Description	Qty
1	15000RM-WSCRPR-01	15000 WING SCRAPER BAR	2
2	15000RM2-WR01	410 WING ROLLER	2
3	725-BLD-FL	725 FIXED BLADE (Anti_Clk)	1
4	725-BLD-FR	725 FIXED BLADE (Clk)	1
5	8400RM-CV14	GUARD BASE MOUNT	2
6	8400RM-HG55	M20 ADJUSTER BLOCK	4
7	8400RM-HG65	M20 THREADED ADJUSTER	4
8	MJ70-270-PE01	PIVOT EYE	2
9	MJ70-460-GBR20	WING UNDERSIDE TROUGH	1
10	SW-270-LITR	SWIFT LIGHT ASSY RH	1
11	SW-410-WG01	MJ70-410 WING	1
12	15000RM2-CV52	RUBBER FLAP	1
13	60CSD	60mm STAR DRIVE	2
14	8400RM-RPV01	ROLLER PIVOT	2
15	8400RM-RPV10	ROLLER PIVOT	2
16	DRV-RC-SWT410	MJ70-410 DRIVE	1
17	LS002	ANTI VIBRATION RUBBER	4
18	MJRC-23	113 PCD COUPLING 4mm PLT	2
19	S3035230012	6 SPLINE 'T' BOX RATIO 2.3	2
20	SW-410-CVR01	410 WING COVER	1
21	15000RM2-AF01	AERO-FOIL (MJ70-410)	1
22	15000RM2-CV53	WING RUBBER CLAMP	1
23	19000RM-AF02	AERO-FOIL (MJ70-550)	1
24	8400RM-HG03	HEIGHT INDICATOR	4
25	8400RM-HG04	HEIGHT GUIDE	4
26	SCRPR-SQ12-01	SCRAPER MOUNT	4
27	SW-240-DF02	REAR DEFLECTOR	1
28	SW-270-DF02	REAR DEFLECTOR	1
29	SW-410-DF01	RUBBER CLAMP	1
30	111044	DIA 26-30mm INSERT	4
31	12HEX109	1/2F HEX 10.9	12
32	12x112FSKS	1/2"x1 1/2" FINE SOCKET HEAD 12.9	12
33	190760	GUARD (COVER 760/BASE 661)	1
34	3/4F	3/4" FINE NYLOC NUT	1
35	34x4FBZP	3/4"x4" FINE BOLT	1
36	5/8F	5/8" FINE NYLOC NUT	8
37	58x214FBZP	5/8"x2 1/4" FINE BOLT	8
38	851	GREASE NIPPLE M8x1.25 STR	8
39	CP176-181MG1	45mm INSERT	2

40	D281215	DISC SPRING 28x12x1.5	4
41	DSW34	DISC SPRING 34x16.3 x2	8
42	FWM12	M12 FLAT WASHER	65
43	FWM12L	M12 FLAT WASHER (LARGE)	4
44	FWM16	M16 FLAT WASHER	8
45	FWM20	M20 FLAT WASHER	2
46	FWM8	M8 FLAT WASHER	22
47	G1106	BRASS TAP CONNECTOR	1
48	I-257	3/4x1/2 REDUCER BUSH	1
49	M12	M12 NYLOC NUT	51
50	M12x20SZP	M12x20 SET BOLT	4
51	M12x25SKBH	M12x25 SOCKET BUTTON HEAD 10.9	8
52	M12x30SKBH	M12x30 SOCKET BUTTON HEAD 10.9	8
53	M12x30SZP	M12x30 SET BOLT	15
54	M12x35SKBH	M12x35 SOCKET BUTTON HEAD 10.9	4
55	M12x40BZP	M12x40 BOLT	4
56	M12x55SKBH	M12x55 SOCKET BUTTON HEAD 10.9	6
57	M12x60BZP	M12x60 BOLT	8
58	M16x50SZP	M16x50 SET BOLT	8
59	M20	M20 NYLOC NUT	1
60	M20x180BZP109	M20x180 BOLT (10.9)	1
61	M8	M8 NYLOC NUT	14
62	M8x100BZP	M8x100 BOLT	4
63	M8x110BZP	M8x110 BOLT	2
64	M8x16SKBH	M8x16 SOCKET BUTTON HEAD 10.9	8
65	M8x16SZP	M8x16 SET BOLT	4
66	M8x20SKBH	M8x20 SOCKET BUTTON HEAD 10.9	2
67	NL12SP	M12 SP NORDLOCK	16
68	NL16SP	M16 SP NORDLOCK	8

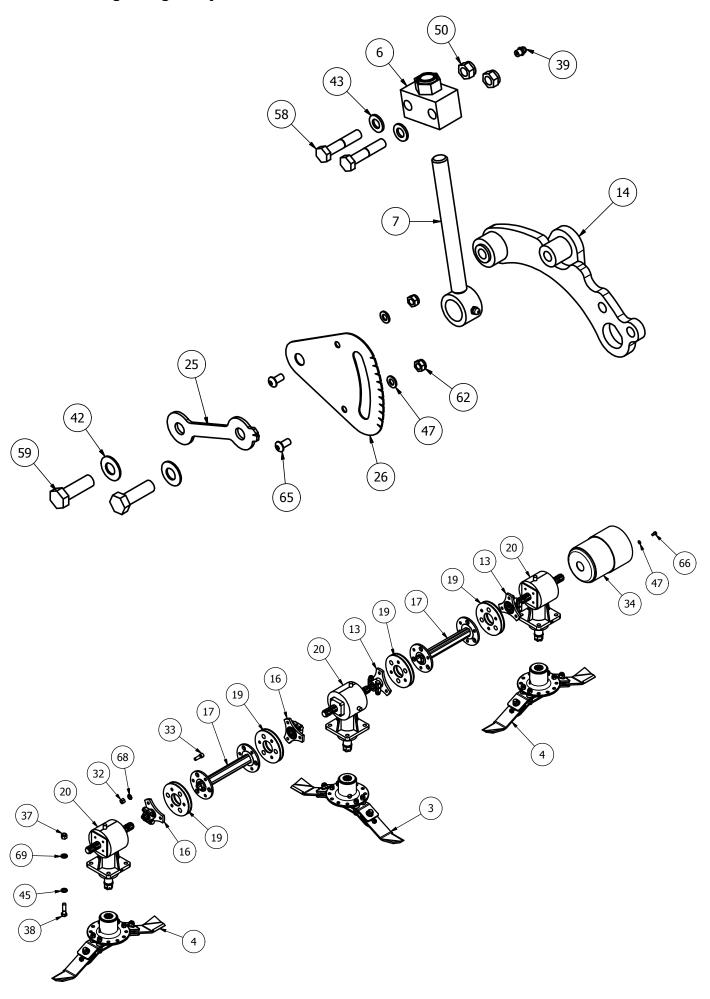
# MJ70-550 Wing - General Assembly



# MJ70-550 Wing - Underbody Assembly



# MJ70-550 Wing - Height Adjuster and Transmission

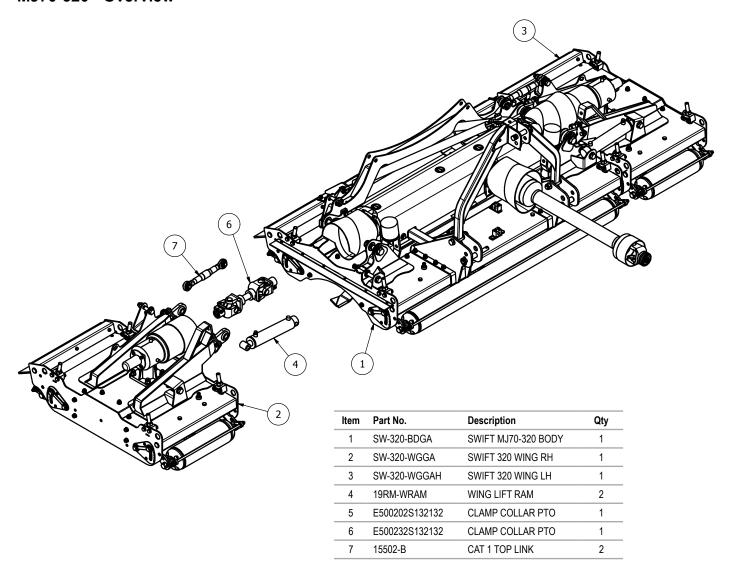


# MJ70-550 Wing - Parts List

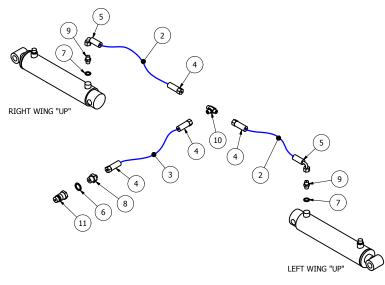
ltem	Part No.	Description	Qty
1	19000RM-WR01	MJ70-550 WING ROLLER	2
2	19000RM-WSCRPR-01	19000 WING SCRAPER BAR	2
3	725-BLD-FL	725 FIXED BLADE (Anti_Clk)	1
4	725-BLD-FR	725 FIXED BLADE (Clk)	2
5	8400RM-CV14	GUARD BASE MOUNT	2
6	8400RM-HG55	M20 ADJUSTER BLOCK	4
7	8400RM-HG65	M20 THREADED ADJUSTER	4
8	MJ70-270-PE01	PIVOT EYE	2
9	MJ70-600-GBR20	WING UNDERSIDE TROUGH	1
10	SW-270-LITR	SWIFT LIGHT ASSY RH	1
11	SW-550-WG01	550 WING	1
12	19000RM-CV52	RUBBER FLAP	1
13	60CSD	60mm STAR DRIVE	2
14	8400RM-RPV01	ROLLER PIVOT	2
15	8400RM-RPV10	ROLLER PIVOT	2
16	DRV-6S-52DC	6 SPLINE 52mm DRIVE	2
17	DRV-RC-SWT410	MJ70-410 DRIVE	2
18	LS002	ANTI VIBRATION RUBBER	4
19	MJRC-23	113 PCD COUPLING 4mm PLT	4
20	S3035230012	6 SPLINE 'T' BOX RATIO 2.3	3
21	SW-550-CVR01	550 WING COVER	1
22	19000RM-AF02	AERO-FOIL (MJ70-550)	1
23	19000RM-CV53	WING RUBBER CLAMP	1
24	8400RM-AF03	AERO-FOIL (8400)	1
25	8400RM-HG03	HEIGHT INDICATOR	4
26	8400RM-HG04	HEIGHT GUIDE	4
27	SCRPR-SQ12-01	SCRAPER MOUNT	4
28	SW-240-DF02	REAR DEFLECTOR	1
29	SW-270-DF02	REAR DEFLECTOR	1
30	SW-550-DF01	RUBBER CLAMP	1
31	111044	DIA 26-30mm INSERT	4
32	12HEX109	1/2F HEX 10.9	24
33	12x112FSKS	1/2"x1 1/2" FINE SOCKET HEAD 12.9	24
34	190760	GUARD (COVER 760/BASE 661)	1
35	3/4F	3/4" FINE NYLOC NUT	1
36	34x4FBZP	3/4"x4" FINE BOLT	1
37	5/8F	5/8" FINE NYLOC NUT	12
38	58x214FBZP	5/8"x2 1/4" FINE BOLT	12
39	851	GREASE NIPPLE M8x1.25 STR	8
40	CP176-181MG1	45mm INSERT	3
41	D281215	DISC SPRING 28x12x1.5	4

42	DSW34	DISC SPRING 34x16.3 x2	8
43	FWM12	M12 FLAT WASHER	74
44	FWM12L	M12 FLAT WASHER (LARGE)	4
45	FWM16	M16 FLAT WASHER	12
46	FWM20	M20 FLAT WASHER	2
47	FWM8	M8 FLAT WASHER	26
48	G1106	BRASS TAP CONNECTOR	2
49	I-257	3/4x1/2 REDUCER BUSH	2
50	M12	M12 NYLOC NUT	56
51	M12x20SZP	M12x20 SET BOLT	4
52	M12x25SKBH	M12x25 SOCKET BUTTON HEAD 10.9	8
53	M12x30SKBH	M12x30 SOCKET BUTTON HEAD 10.9	12
54	M12x30SZP	M12x30 SET BOLT	16
55	M12x35SKBH	M12x35 SOCKET BUTTON HEAD 10.9	4
56	M12x40BZP	M12x40 BOLT	4
57	M12x55SKBH	M12x55 SOCKET BUTTON HEAD 10.9	6
58	M12x60BZP	M12x60 BOLT	8
59	M16x50SZP	M16x50 SET BOLT	8
60	M20	M20 NYLOC NUT	1
61	M20x180BZP109	M20x180 BOLT (10.9)	1
62	M8	M8 NYLOC NUT	16
63	M8x100BZP	M8x100 BOLT	6
64	M8x110BZP	M8x110 BOLT	2
65	M8x16SKBH	M8x16 SOCKET BUTTON HEAD 10.9	8
66	M8x16SZP	M8x16 SET BOLT	4
67	M8x20SKBH	M8x20 SOCKET BUTTON HEAD 10.9	2
68	NL12SP	M12 SP NORDLOCK	28
69	NL16SP	M16 SP NORDLOCK	12

#### MJ70-320 - Overview

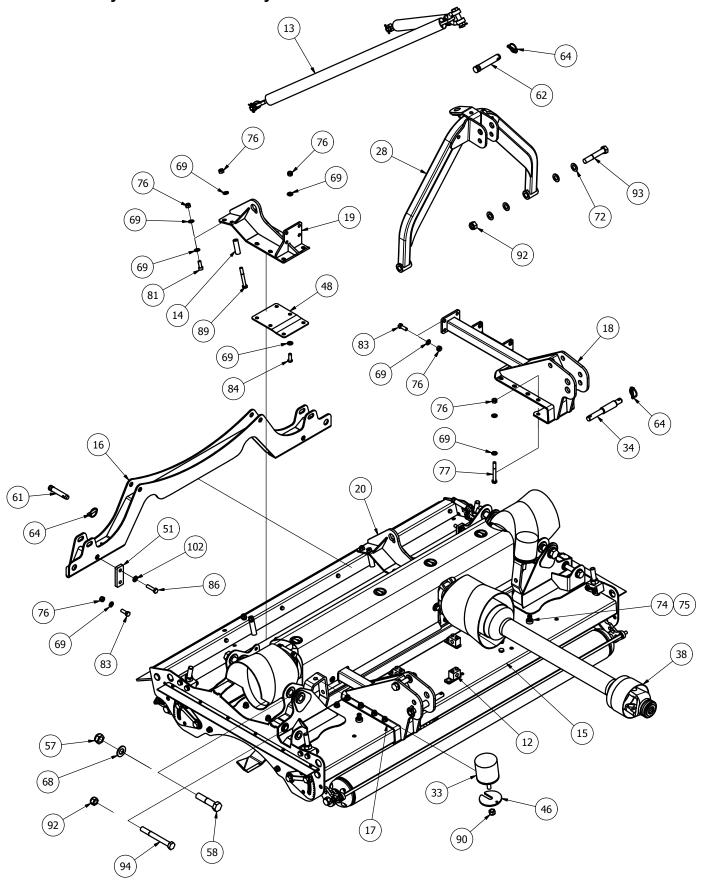


# MJ70-320/320FM - Hydraulics

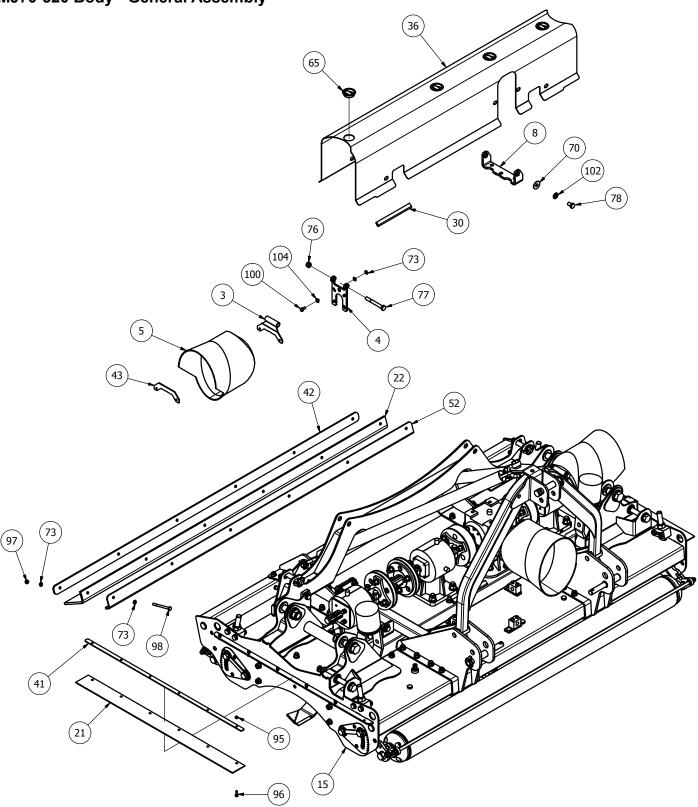


Item	Part No.	Description	Qty
1	19RM-WRAM	WING LIFT RAM	2
2	320-HOSE A	1/4"x1160mm Str to Block 90	2
3	320-HOSE-B	1/4"x2440mm Str to Str	1
4	CRP1400	1/4" CRIMP (STRAIGHT)	4
5	CRP1490	1/4" CRIMP SWEPT (90 Deg)	2
6	EDOW12	1/2" DOWTY WASHER	1
7	EDOW14	1/4" DOWTY WASHER	2
8	EMM12-14	1/2-14" M/M CONNECTOR	1
9	EMM14RV	1/4" M/M RESTRICTOR (DIA 1mm)	2
10	EMMMT14	1/4" M/M/M CONNECTOR	1
11	QRM12	1/2" QUICK RELEASE MALE	1

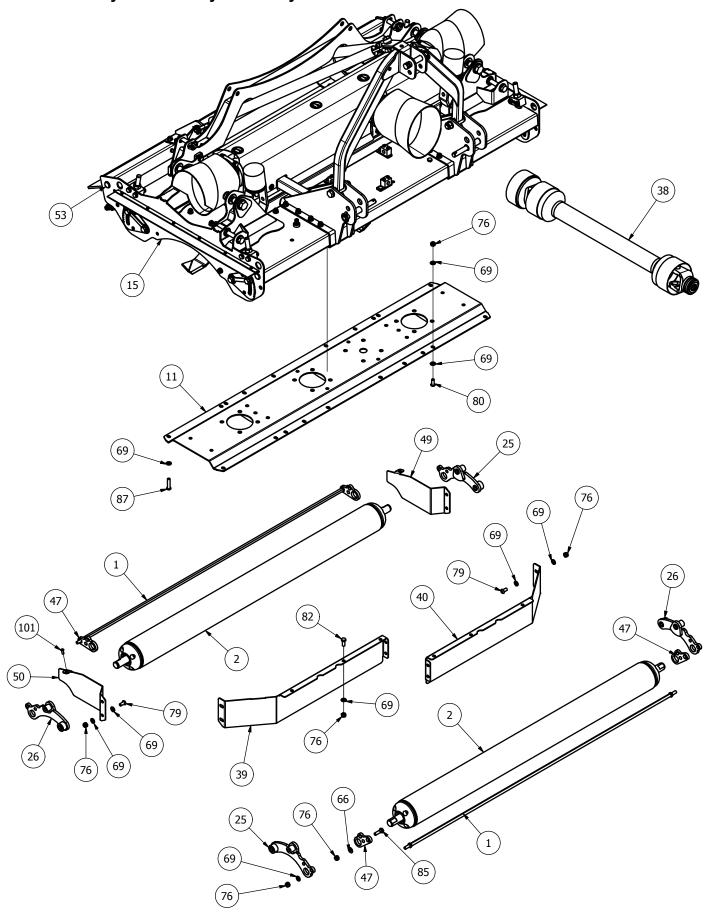
# MJ70-320 Body - General Assembly



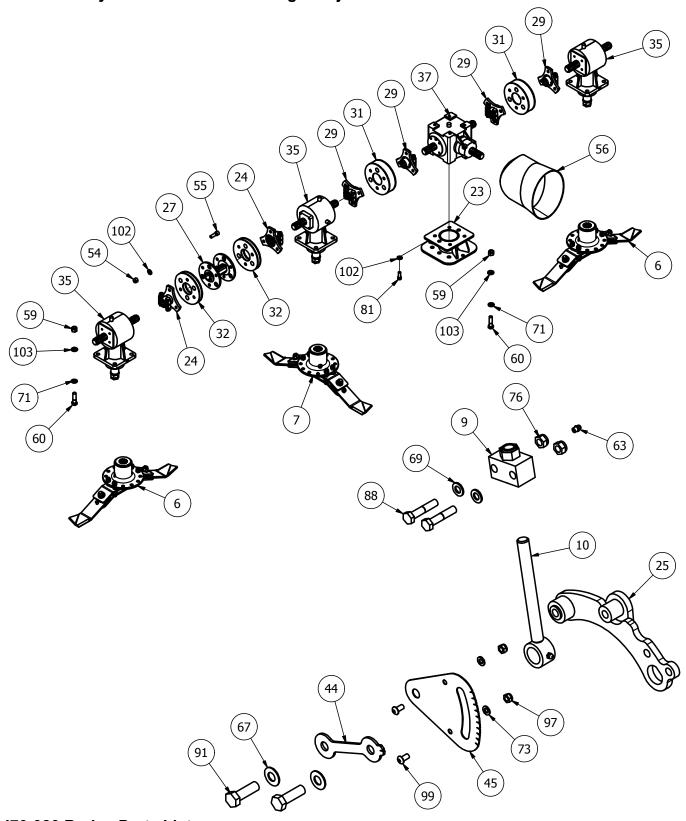
# MJ70-320 Body - General Assembly



MJ70-320 Body - Underbody Assembly



# MJ70-320 Body - Transmission and Height Adjuster



# MJ70-320 Body - Parts List

Item	Part No.	Description	Qty
1	11000RM-BSCRPR-20	11000 BODY SCRAPER BAR	2
2	11GMROLB-V2	MJ70-320 BODY ROLLER	2
3	11RM-C10	COVER PIVOT	2
4	11RM-C11	COVER PIVOT	2
5	11RM-C16	MODIFIED OVAL GUARD	2
6	725-BLD-FL	725 FIXED BLADE (Anti_Clk)	2
7	725-BLD-FR	725 FIXED BLADE (Clk)	1

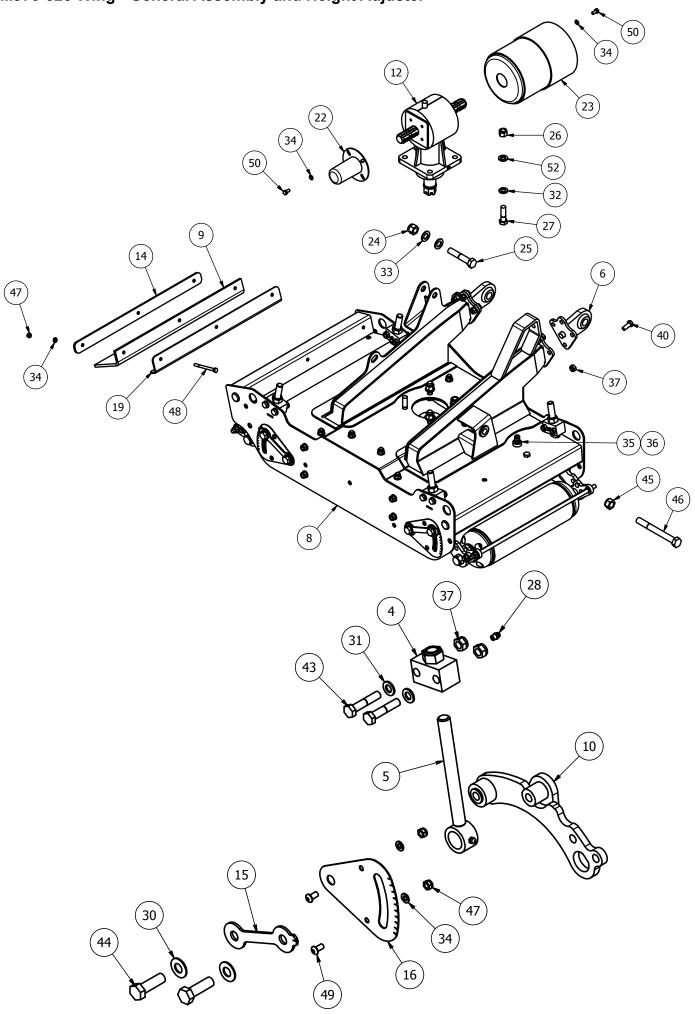
8	8400RM-CV14	GUARD BASE MOUNT	2
9	8400RM-HG55	M20 ADJUSTER BLOCK	4
10	8400RM-HG65	M20 THREADED ADJUSTER	4
11	MJ70-320-GBR18	BODY UNDERSIDE TROUGH	1
12	MJ70-320-HYD05	HYDRAULIC BLOCK	3
13	MJ70-320-STRP01	SWIFT CHAIN SLING	1
14	SW-240-LM08	SPACER TUBE	4
15	SW-320-BD01	MJ70-320 BODY	1

# MJ70-320 Body - Parts List (continued)

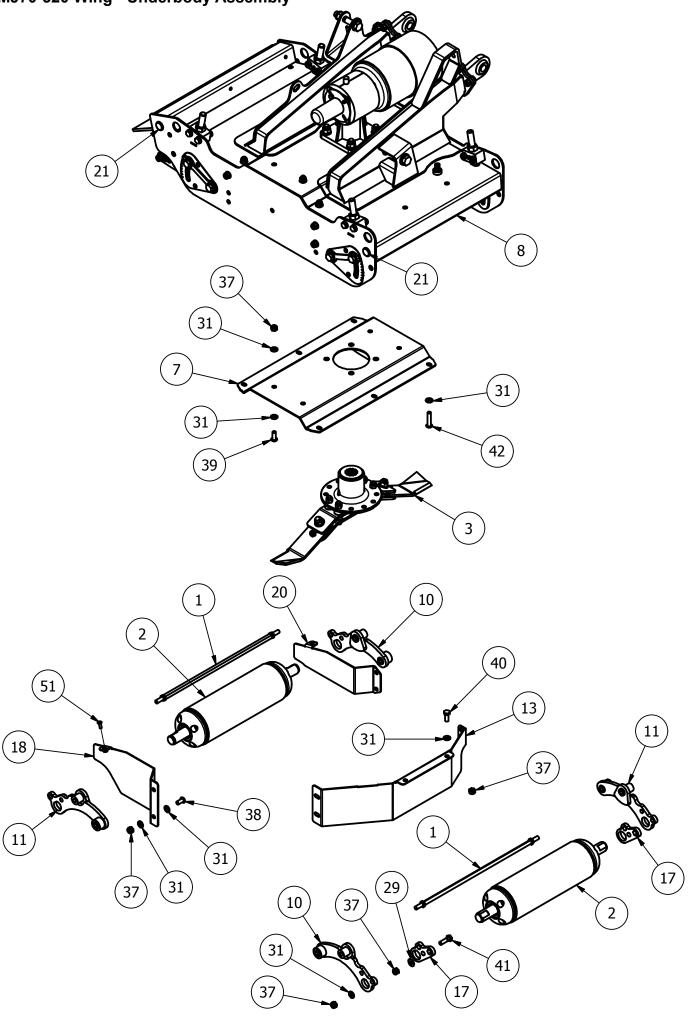
	10-320 Body		
16	SW-320-HT01	HINGE TIE	1
17	SW-320-LM01	SWIFT-320 LINKAGE MOUNT	1
18	SW-320-LM01H	MJ70-320 LINKAGE MOUNT	1
19	SW-320-SM01	STRAP MOUNT (REAR)	1
20	SW-320-SM01H	STRAP MOUNT REAR	1
21	11000RM2-CV40	EDGE RUBBER	2
22	11000RM2-CV54	RUBBER FLAP	1
23	2000CM-GBM01	CENTER BOX MOUNT	1
24	60CSD	60mm STAR DRIVE	2
25	8400RM-RPV01	ROLLER PIVOT	2
26	8400RM-RPV10	ROLLER PIVOT	2
27	DRV-RC-SWT240	MJ70-240 DRIVE	1
28	GM3	STANDARD A-FRAME	1
29	GM84-DRV	6 SPLINE STAR DRIVE	4
30	LS002	ANTI VIBRATION RUBBER	6
31	MJRC-113	113 PCD RUBBER COUPLING	2
32	MJRC-23	113 PCD COUPLING 4mm PLT	2
33	MOT10	DIA 100x100 BUFFER	2
34	S15707	CAT 1/2 LINK PIN	2
35	S3035230012	6 SPLINE 'T' BOX RATIO 2.3	3
36	SW-320-CV01	320 BODY COVER (REAR)	1
37	T27A267245	6 SPLINE 'T' BOX RATIO 1:1.92	1
38	V600910ENC12RW6	V60 FIXED SLIP CLUTCH	<u>_</u>
39	11000RM-AF05	AERO-FOIL (11000)	<u>'</u> 1
40	11000RM-AF05H	AERO-FOIL (11000)	1
41	11000RM2-CV41	EDGE RUBBER CLAMP	2
			1
42	11000RM2-CV53	BODY RUBBER CLAMP	
43	11RM-C14	COVER MOUNT	2
44	8400RM-HG03	HEIGHT INDICATOR	4
45	8400RM-HG04	HEIGHT GUIDE	4
46	8T19	BUFFER SPACER	2
47	SCRPR-SQ12-01	SCRAPER MOUNT	4
48	SW-240-LM09	SUPPORT PLATE	4
49	SW-270-DF04	REAR DEFLECTOR	1
50	SW-270-DF04H	REAR DEFLECTOR	1
51	SW-270-HT05	BOLT PLATE	2
52	SW-320-DF01	RUBBER CLAMP	1
53	111044	DIA 26-30mm INSERT	8
54	12HEX109	1/2F HEX 10.9	24
55	12x112FSKS	1/2"x1 1/2" FINE SOCKET HEAD 12.9	24
56	190.000.545	PTO GUARD (EXTENDED OVAL)	1
57	1UNF	1" FINE NYLOC (1/2 NUT)	4
58	1x412FBZP	1"x4 1/2" FINE BOLT	4
59	5/8F	5/8" FINE NYLOC NUT	16
60	58x214FBZP	5/8"x2 1/4" FINE BOLT	16
61	73	CAT 1 PIN DIA 19x76mm	2
62	81	CAT 2 PIN DIA 25.4x110mm	1
63	851	GREASE NIPPLE M8x1.25 STR	8
64	AN099/10	LINCH PIN DIA 9.5	5
	AN099/10 CP176-181MG1	LINCH PIN DIA 9.5 45mm INSERT	5 4

67	DSW34	DISC SPRING 34x16.3 x2	8
68	FW1	DIA 1" FLAT WASHER	4
69	FWM12	M12 FLAT WASHER	158
70	FWM12L	M12 FLAT WASHER (LARGE)	8
71	FWM16	M16 FLAT WASHER	16
72	FWM20	M20 FLAT WASHER	8
73	FWM8	M8 FLAT WASHER	30
74	G1106	BRASS TAP CONNECTOR	2
75	I-257	3/4x1/2 REDUCER BUSH	2
76	M12	M12 NYLOC NUT	102
77	M12x100BZP	M12x100 BOLT	6
78	M12x20SZP	M12x20 SET BOLT	8
79	M12x25SKBH	M12x25 SOCKET BUTTON HEAD 10.9	8
80	M12x30SKBH	M12x30 SOCKET BUTTON HEAD 10.9	14
81	M12x30SKS	M12x30 SOCKET HEAD SCREW	8
82	M12x30SZP	M12x30 SET BOLT	8
83	M12x35BZP	M12x35 BOLT	10
84	M12x35SKBH	M12x35 SOCKET BUTTON HEAD 10.9	32
85	M12x40BZP	M12x40 BOLT	4
86	M12x50SZP	M12x50 SET BOLT	2
87	M12x55SKBH	M12x55 SOCKET BUTTON HEAD 10.9	4
88	M12x60BZP	M12x60 BOLT	8
89	M12x90BZP	M12x90 BOLT	4
90	M16	M16 NYLOC NUT	2
91	M16x50SZP	M16x50 SET BOLT	8
92	M20	M20 NYLOC NUT	4
93	M20x120BZP	M20x120 BOLT	2
94	M20x180BZP109	M20x180 BOLT (10.9)	2
95	M6	M6 NYLOC NUT	12
96	M6x20SZP	M6x20 SET BOLT	12
97	M8	M8 NYLOC NUT	16
98	M8x100BZP	M8x100 BOLT	6
99	M8x16SKBH	M8x16 SOCKET BUTTON HEAD 10.9	8
100	M8x16SZP	M8x16 SET BOLT	8
101	M8x20SKBH	M8x20 SOCKET BUTTON HEAD 10.9	2
102	NL12SP	M12 SP NORDLOCK	38
103	NL16SP	M16 SP NORDLOCK	16
104	NL8SP	M8 SP NORDLOCK	8

MJ70-320 Wing - General Assembly and Height Adjuster



# MJ70-320 Wing - Underbody Assembly



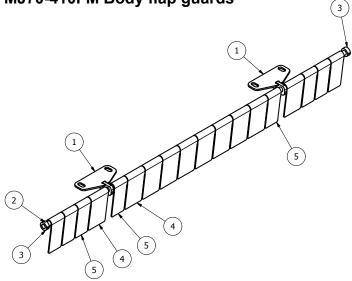
# MJ70-320 Wing - Parts List

ltem	Part No.	Description	Qty
1	11000RM-WSCRPR-01	11000 WING SCRAPER BAR	2
2	11GMROLW-V2	MJ70-270 WING ROLLER	2
3	725-BLD-FR	725 FIXED BLADE (Clk)	1
4	8400RM-HG55	M20 ADJUSTER BLOCK	4
5	8400RM-HG65	M20 THREADED ADJUSTER	4
6	MJ70-270-PE01	PIVOT EYE	2
7	MJ70-320-GBR24	WING UNDERSIDE TROUGH	1
8	SW-270-WG01	MJ70-270 WING	1
9	11000RM2-CV56	RUBBER FLAP	1
10	8400RM-RPV01	ROLLER PIVOT	2
11	8400RM-RPV10	ROLLER PIVOT	2
12	S3035230012	6 SPLINE 'T' BOX RATIO 2.3	1
13	11000RM-AF02	AERO-FOIL (11000)	1
14	11000RM2-CV55	WING RUBBER CLAMP	1
15	8400RM-HG03	HEIGHT INDICATOR	4
16	8400RM-HG04	HEIGHT GUIDE	4
17	SCRPR-SQ12-01	SCRAPER MOUNT	4
18	SW-240-DF02	REAR DEFLECTOR	1
19	SW-270-DF01	RUBBER CLAMP	1
20	SW-270-DF02	REAR DEFLECTOR	1
21	111044	DIA 26-30mm INSERT	4
22	190592	PTO HAT	1
23	190760	GUARD (COVER 760/BASE 661)	1
24	3/4F	3/4" FINE NYLOC NUT	1
25	34x4FBZP	3/4"x4" FINE BOLT	1
26	5/8F	5/8" FINE NYLOC NUT	4
27	58x214FBZP	5/8"x2 1/4" FINE BOLT	4
28	851	GREASE NIPPLE M8x1.25 STR	8
29	D281215	DISC SPRING 28x12x1.5	4
30	DSW34	DISC SPRING 34x16.3 x2	8
31	FWM12	M12 FLAT WASHER	46

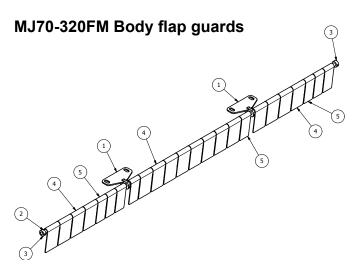
32	FWM16	M16 FLAT WASHER	4
33	FWM20	M20 FLAT WASHER	2
34	FWM8	M8 FLAT WASHER	24
35	G1106	BRASS TAP CONNECTOR	1
36	I-257	3/4x1/2 REDUCER BUSH	1
37	M12	M12 NYLOC NUT	40
38	M12x25SKBH	M12x25 SOCKET BUTTON HEAD 10.9	8
39	M12x30SKBH	M12x30 SOCKET BUTTON HEAD 10.9	6
40	M12x30SZP	M12x30 SET BOLT	10
41	M12x40BZP	M12x40 BOLT	4
42	M12x55SKBH	M12x55 SOCKET BUTTON HEAD 10.9	4
43	M12x60BZP	M12x60 BOLT	8
44	M16x50SZP	M16x50 SET BOLT	8
45	M20	M20 NYLOC NUT	1
46	M20x180BZP109	M20x180 BOLT (10.9)	1
47	M8	M8 NYLOC NUT	13
48	M8x100BZP	M8x100 BOLT	3
49	M8x16SKBH	M8x16 SOCKET BUTTON HEAD 10.9	8
50	M8x16SZP	M8x16 SET BOLT	8
51	M8x20SKBH	M8x20 SOCKET BUTTON HEAD 10.9	2
52	NL16SP	M16 SP NORDLOCK	4

# **MJ70 Winged Front Mounted Models**

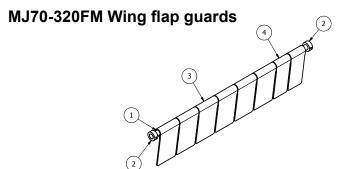
MJ70-410FM Body flap guards



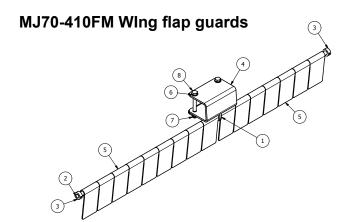
Item Part No.		Description	Qty
1	MJ70-240-FMGF20	FLAP SUPPORT (FRONT)	2
2	MJ70-270-FMGF02	FLAP PIVOT SHAFT	1
3	S96	DIA 5/8"x1 1/8"x1/2" COLLAR	2
4	MJ70-240-FMGF03	80mm FLAP GUARD	10
5	MJ70-240-FMGF04	60mm FLAP GUARD	8



Item	Part No.	Description	
1	MJ70-240-FMGF20	FLAP SUPPORT (FRONT)	2
2	MJ70-320-FMGF02	FLAP PIVOT SHAFT	1
3	S96	DIA 5/8"x1 1/8"x1/2" COLLAR	2
4	MJ70-240-FMGF03	80mm FLAP GUARD	16
5	MJ70-240-FMGF04	60mm FLAP GUARD	8

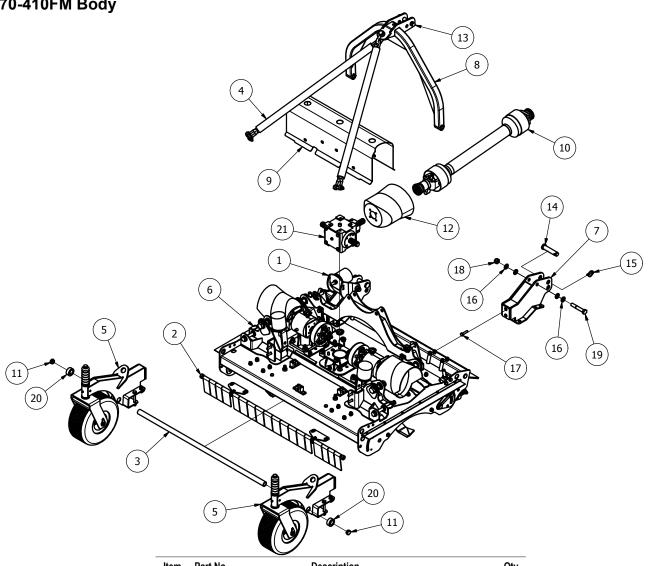


Item	Part No.	Description	Qty	
1	MJ70-320-FMGF03	FLAP PIVOT SHAFT	1	
2	S96	DIA 5/8"x1 1/8"x1/2" COLLAR	2	
3	MJ70-240-FMGF03	80mm FLAP GUARD	6	
4	MJ70-240-FMGF04	60mm FLAP GUARD	2	



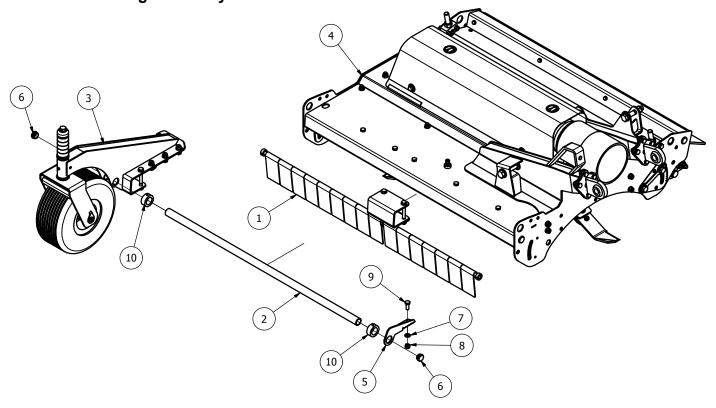
Item	Part No. Description		Qty	
1	MJ70-240-FMGF20	FLAP SUPPORT (FRONT)	1	
2	MJ70-460-FMGF03	FLAP PIVOT SHAFT	1	
3	S96	DIA 5/8"x1 1/8"x1/2" COLLAR	2	
4	SW-270-LM30	GUARD BASE	1	
5	MJ70-240-FMGF03	80mm FLAP GUARD	16	
6	FWM12	M12 FLAT WASHER	4	
7	M12	M12 NYLOC NUT	2	
8	M12x110BZP	M12x110 BOLT	2	

# MJ70-410FM Body



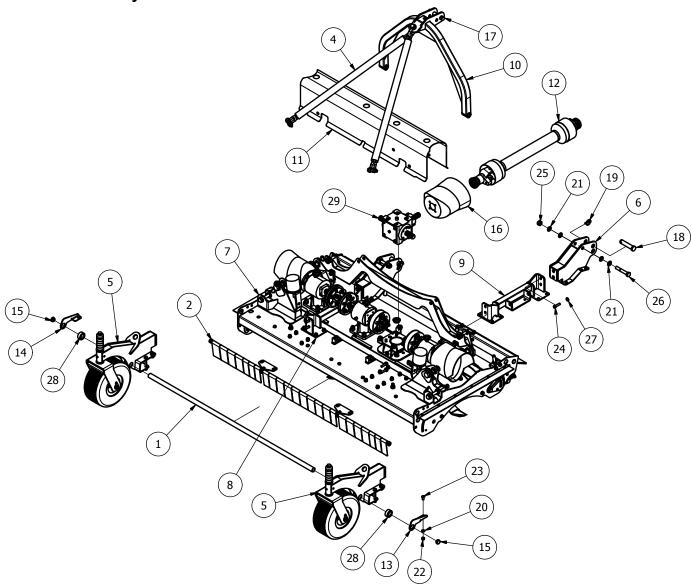
Item	Part No.	Description	Qty
1	3000T-AFBGA	A' FRAME BUFFER	1
2	MJ70-270-FMGF-BD	FLAP GUARD BODY (270)	1
3	MJ70-270-FMGF03	GUARD TUBE	1
4	MJ70-320-STRP01	SWIFT CHAIN SLING	1
5	MJ70-CW-SW20	SWIFT CASTOR (FRONT)	2
6	SW-270-BDGA	MJ70-270 BODY	1
7	SW-270-LM20	LINKAGE MOUNT (FRONT)	2
8	3000T-AF-01	3000T A-FRAME	1
9	SW-270-CV01	MJ70-270 BODY COVER	1
10	V600810ENC12RB2	V60 SHEARBOLT / OR	1
11	111044	DIA 26-30mm INSERT	2
12	190.000.545	PTO GUARD (EXTENDED OVAL)	1
13	81	CAT 2 PIN DIA 25.4x110mm	1
14	9162	CAT 2 PIN DIA 28.5x113mm	2
15	AN099/10	LINCH PIN DIA 9.5	3
16	FWM20	M20 FLAT WASHER	4
17	M12x50SZP	M12x50 SET BOLT	4
18	M20	M20 NYLOC NUT	1
19	M20x120BZP	M20x120 BOLT	1
20	S4444	DIA 1 3/8"x2 1/8"x7/8" COLLAR	2
21	T27A267006	6 SPLINE 'T' BOX RATIO 1.1	1

# MJ70-410FM Wing Assembly



Item	Part No.	Description	Qty
1	MJ70-460-FMGF-WG	FLAP GUARD WING (410)	1
2	MJ70-460-FMGF16	GUARD TUBE (WING)	1
3	MJ70-CW-SW01	SWIFT CASTOR (FRONT)	1
4	SW-410-WGGA	MJ70-410 WING	1
5	MJ70-320-FMGF04	GUARD TUBE SUPPORT	1
6	111044	DIA 26-30mm INSERT	2
7	FWM12	M12 FLAT WASHER	1
8	M12	M12 NYLOC NUT	1
9	M12x30SZP	M12x30 SET BOLT	1
10	S4444	DIA 1 3/8"x2 1/8"x7/8" COLLAR	2

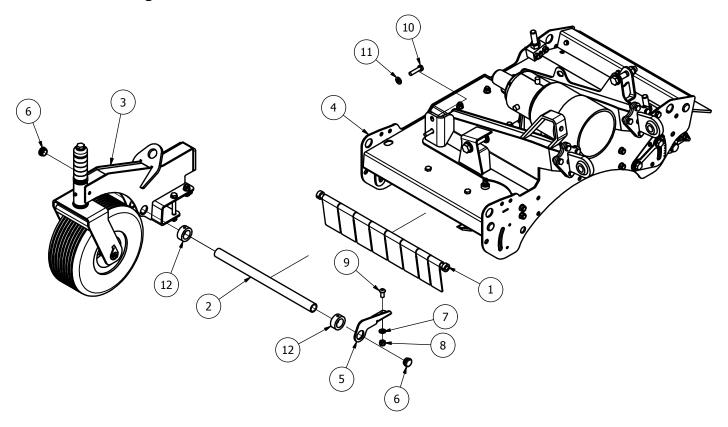
# MJ70-320FM Body



Item	Part No.	Description	Qty
1	MJ70-190-FMGF15	GUARD TUBE	1
2	MJ70-320-FMGF-BD	FLAP GUARD BODY (MJ70-320)	1
3	MJ70-320-HYD05	HYDRAULIC BLOCK	1
4	MJ70-320-STRP01	SWIFT CHAIN SLING	1
5	MJ70-CW-SW20	SWIFT CASTOR (FRONT)	2
6	SW-270-LM20	LINKAGE MOUNT (FRONT)	2
7	SW-320-BDGA	SWIFT MJ70-320 BODY	1
8	SW-320-LM20	320 LINKAGE SPACER	1
9	SW-320-LM20H	320 LINKAGE SPACER	1
10	3000T-AF-01	3000T A-FRAME	1
11	SW-320-CV01FM	320 BODY COVER (FRONT)	1
12	V600810ENC12RB2	V60 SHEARBOLT / OR	1
13	MJ70-320-FMGF04	GUARD TUBE SUPPORT	1
14	MJ70-320-FMGF04H	GUARD TUBE SUPPORT	1
15	111044	DIA 26-30mm INSERT	2
16	190.000.545	PTO GUARD (EXTENDED OVAL)	1

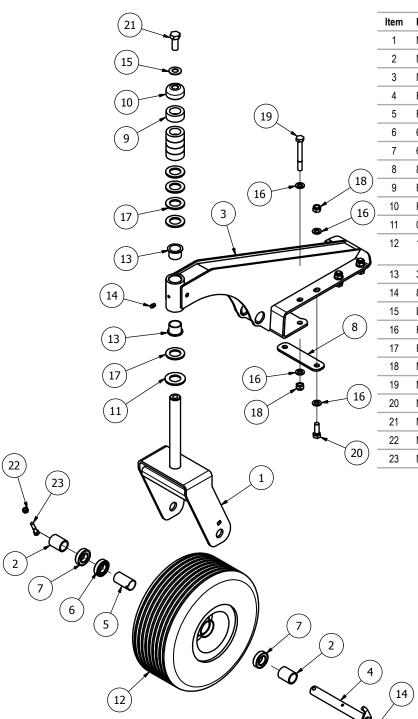
17	81	CAT 2 PIN DIA 25.4x110mm	1
18	9162	CAT 2 PIN DIA 28.5x113mm	2
19	AN099/10	LINCH PIN DIA 9.5	3
20	FWM12	M12 FLAT WASHER	2
21	FWM20	M20 FLAT WASHER	8
22	M12	M12 NYLOC NUT	2
23	M12x25SKBH	M12x25 SOCKET BUTTON HEAD 10.9	2
24	M12x50SZP	M12x50 SET BOLT	8
25	M20	M20 NYLOC NUT	2
26	M20x120BZP	M20x120 BOLT	2
27	NL12SP	M12 SP NORDLOCK	8
28	S4444	DIA 1 3/8"x2 1/8"x7/8" COLLAR	2
29	T27A267006	6 SPLINE 'T' BOX RATIO 1.1	1

# MJ70-320FM Wing



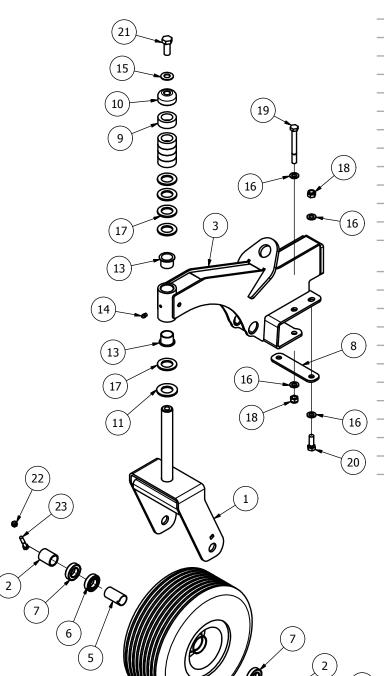
Item	Part No.	Description	Qty
1	MJ70-320-FMGF-WG	FLAP GUARD WING (MJ70-270)	1
2	MJ70-320-FMGF16	GUARD TUBE (WING)	1
3	MJ70-CW-SW20	SWIFT CASTOR (FRONT)	1
4	SW-320FM-WGGA	MJ70-320 WING	1
5	MJ70-320-FMGF04	GUARD TUBE SUPPORT	1
6	111044	DIA 26-30mm INSERT	2
7	FWM12	M12 FLAT WASHER	1
8	M12	M12 NYLOC NUT	1
9	M12x25SKBH	M12x25 SOCKET BUTTON HEAD 10.9	1
10	M12x50SZP	M12x50 SET BOLT	2
11	NL12SP	M12 SP NORDLOCK	2
12	S4444	DIA 1 3/8"x2 1/8"x7/8" COLLAR	2

#### MJ70-CW-SW01



Item	Part No.	Description	Qty
1	MJ70-CW-020	MJ70 CASTOR YOKE	1
2	MJ70-CW-025	CASTOR SPACER	2
3	MJ70-CW-SW02	SWIFT CASTOR STAND	1
4	RMCW-030	CASTOR AXLE	1
5	RMCW-033	BEARING SPACER TUBE	1
6	6005	47x25x12 DEEP GROOVE	1
7	6005RS	47x25x12 DEEP GROOVE	2
8	8400RM3-LM15	LINKAGE SUPPORT (FRONT)	1
9	RM2-L019	HEIGHT ADJUSTOR NYLON	5
10	RM2-L020	CASTOR TOP	1
11	0051300000VR	NYLON WASHER 56x31x4	1
12	15x6-00-6	WHEEL 364x151mmx 6 PLY (TUBE)	1
13	3026DU	30x34x26 FLANGE BUSH	2
14	851	GREASE NIPPLE M8x1.25 STR	2
15	DSW34	DISC SPRING 34x16.3 x2	1
16	FWM12	M12 FLAT WASHER	16
17	FWM30	M30 FLAT WASHER	5
18	M12	M12 NYLOC NUT	8
19	M12x100BZP	M12x100 BOLT	2
20	M12x35BZP	M12x35 BOLT	6
21	M16x40SZP	M16x40 SET BOLT	1
22	M8	M8 NYLOC NUT	1
23	M8x40BZP	M8x40 BOLT	1

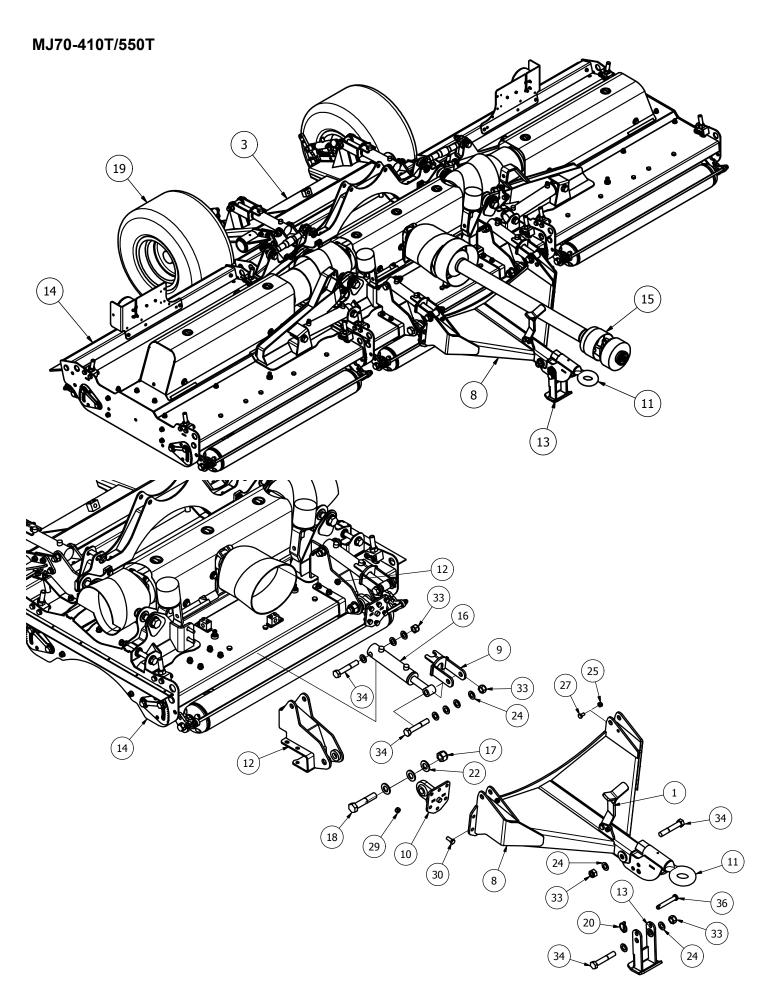
#### MJ70-CW-SW20

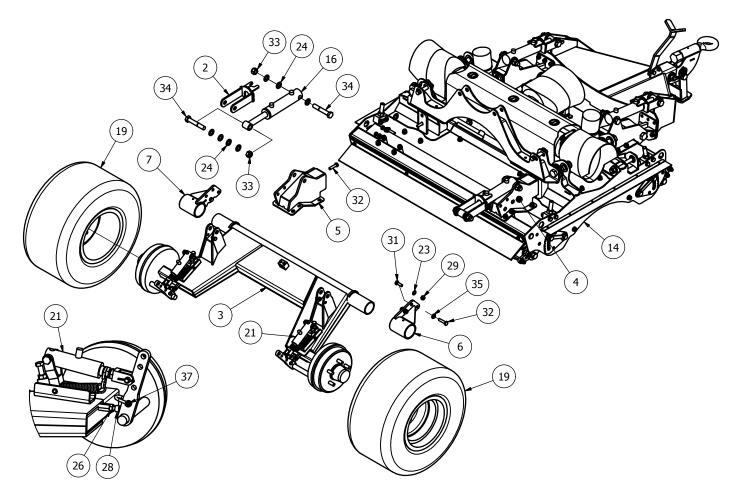


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ltem	Part No.	Description	Qty
1	MJ70-CW-020	MJ70 CASTOR YOKE	1
2	MJ70-CW-025	CASTOR SPACER	2
3	MJ70-CW-SW21	SWIFT CASTOR STAND	1
4	RMCW-030	CASTOR AXLE	1
5	6005	47x25x12 DEEP GROOVE	1
6	6005RS	47x25x12 DEEP GROOVE	2
7	RMCW-033	BEARING SPACER TUBE	1
8	8400RM3-LM15	LINKAGE SUPPORT (FRONT)	1
9	RM2-L019	HEIGHT ADJUSTOR NYLON	5
10	RM2-L020	CASTOR TOP	1
11	0051300000VR	NYLON WASHER 56x31x4	1
12	15x6-00-6	WHEEL 364x151mmx 6 PLY (TUBE)	1
13	3026DU	30x34x26 FLANGE BUSH	2
14	851	GREASE NIPPLE M8x1.25 STR	2
15	DSW34	DISC SPRING 34x16.3 x2	1
16	FWM12	M12 FLAT WASHER	8
17	FWM30	M30 FLAT WASHER	5
18	M12	M12 NYLOC NUT	4
19	M12x110BZP	M12x110 BOLT	2
20	M12x35BZP	M12x35 BOLT	2
21	M16x40SZP	M16x40 SET BOLT	1
22	M8	M8 NYLOC NUT	1
23	M8x40BZP	M8x40 BOLT	1

# **MJ70 Winged Trailed Models**



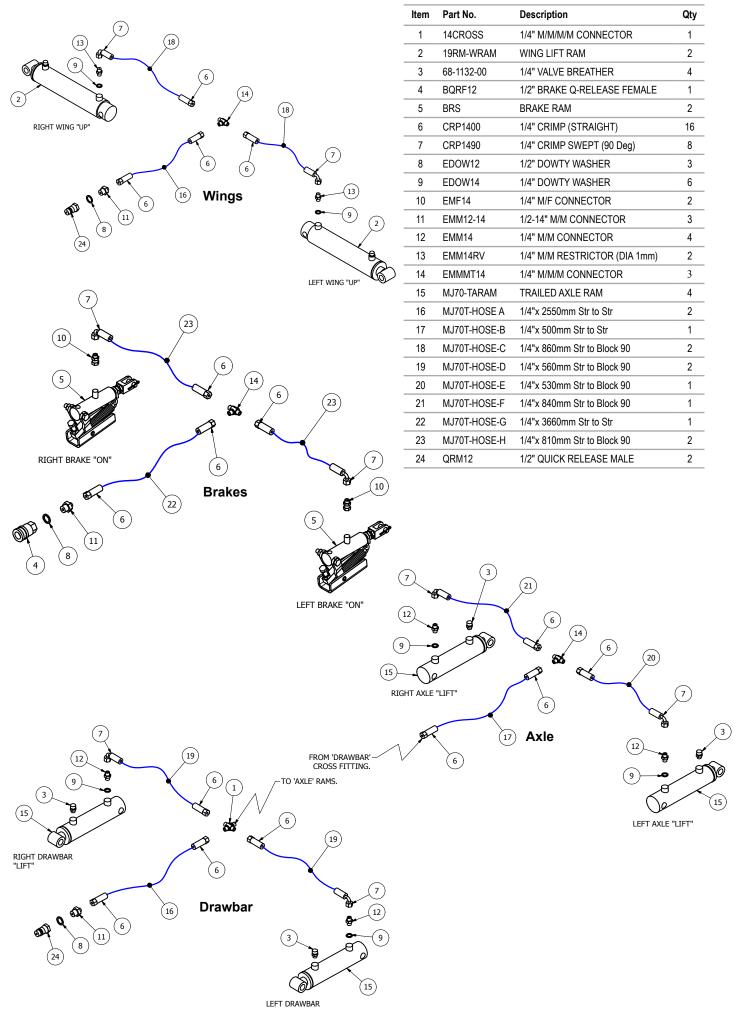


### MJ70-410T/550T - Parts List

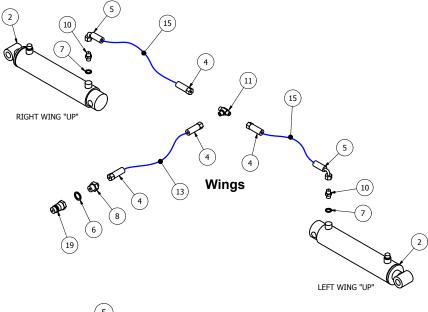
Item	Part No.	Description	Qty
1	12DB-030	PTO STAND	1
2	MJ70-TAX300	AXLE RAM STOP	2
3	MJ70-TAX400	SWIFT TRAILED AXLE	1
4	MJ70-TAXM30	AXLE MOUNT (SWIFT)	1
5	MJ70-TAXM30H	AXLE MOUNT (SWIFT)	1
6	MJ70-TAXM40	AXLE BEARING	1
7	MJ70-TAXM40H	AXLE BEARING	1
8	MJ70-TDB200	TRAILED DRAWBAR	1
9	MJ70-TDB300	DRAWBAR RAM STOP	2
10	MJ70-TDBP01	DRAWBAR PIVOT	2
11	MJ70-THT10	TRAILED HITCH	1
12	MJ70-THTM01	HITCH MOUNT	2
13	MJ70-TSTD01	TRAILED STAND	1
14		MJ70-410T/550T	
15	98611210CE00900200	WIDE ANGLE V60 FIXED SLIP	1
16	MJ70-TARAM	TRAILED AXLE RAM	4
17	1F	1" FINE NYLOC NUT	2
18	1x5FBZP	1"x5" FINE BOLT	2
19	26120012	DIA 650x320mm WHEEL	2
20	37	LINCH PIN DIA 6	1

21	BRS	BRAKE RAM	2
22	FW1	DIA 1" FLAT WASHER	6
23	FWM12	M12 FLAT WASHER	6
24	FWM20	M20 FLAT WASHER	36
25	M10	M10 NYLOC NUT	5
26	M10HEX	M10 PLAIN NUT	2
27	M10x20SZP	M10x20 SET BOLT	5
28	M10x30SKS	M10x30mm SOCKET HEAD 12.9	2
29	M12	M12 NYLOC NUT	17
30	M12x30SZP	M12x30 SET BOLT	12
31	M12x35BZP	M12x35 BOLT	5
32	M12x50SZP	M12x50 SET BOLT	6
33	M20	M20 NYLOC NUT	11
34	M20x120BZP	M20x120 BOLT	11
35	NL12SP	M12 SP NORDLOCK	2
36	S15501	CAT 0 PIN DIA 16x97mm	1
37	S2765	5/16" 'D' Shackle	2

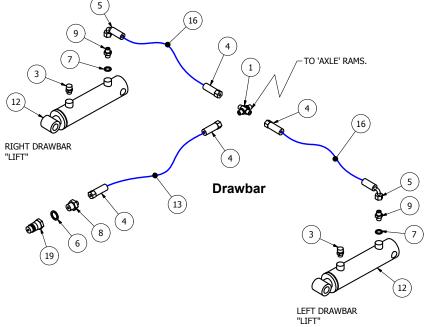
#### MJ70-410T/550T - Hydraulics - Braked Axle

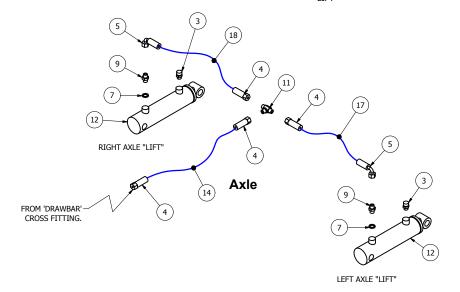


# MJ70-410T/550T - Hydraulics - Axle with no brakes



	Item	Part No.	Description	Qty
	1	14CROSS	1/4" M/M/M/M CONNECTOR	1
	2	19RM-WRAM	WING LIFT RAM	2
	3	68-1132-00	1/4" VALVE BREATHER	4
	4	CRP1400	1/4" CRIMP (STRAIGHT)	12
	5	CRP1490	1/4" CRIMP SWEPT (90 Deg)	6
	6	EDOW12	1/2" DOWTY WASHER	2
	7	EDOW14	1/4" DOWTY WASHER	6
	8	EMM12-14	1/2-14" M/M CONNECTOR	2
	9	EMM14	1/4" M/M CONNECTOR	4
)	10	EMM14RV	1/4" M/M RESTRICTOR (DIA 1mm)	2
	11	EMMMT14	1/4" M/M/M CONNECTOR	2
	12	MJ70-TARAM	TRAILED AXLE RAM	4
	13	MJ70T-HOSE A	1/4"x2550mm Str to Str	2
	14	MJ70T-HOSE-B	1/4"x500mm Str to Str	1
	15	MJ70T-HOSE-C	1/4"x860mm Str to Block 90	2
	16	MJ70T-HOSE-D	1/4"x560mm Str to Block 90	2
	17	MJ70T-HOSE-E	1/4"x530mm Str to Block 90	1
	18	MJ70T-HOSE-F	1/4"x840mm Str to Block 90	1
	19	QRM12	1/2" QUICK RELEASE MALE	2

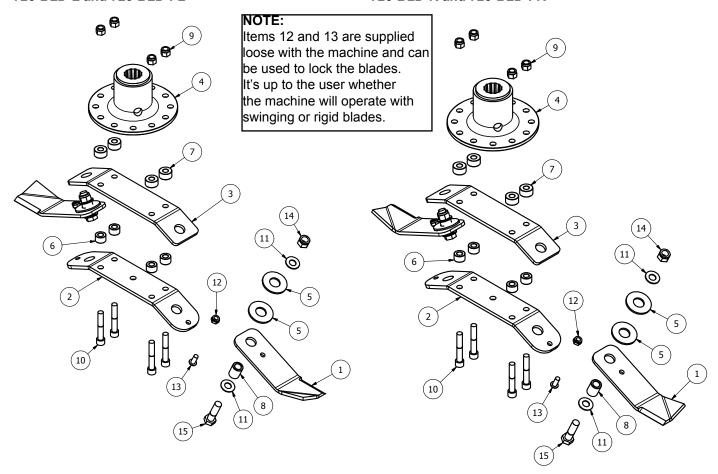




#### **MJ70 Blades**

#### 725-BLD-L and 725-BLD-FL

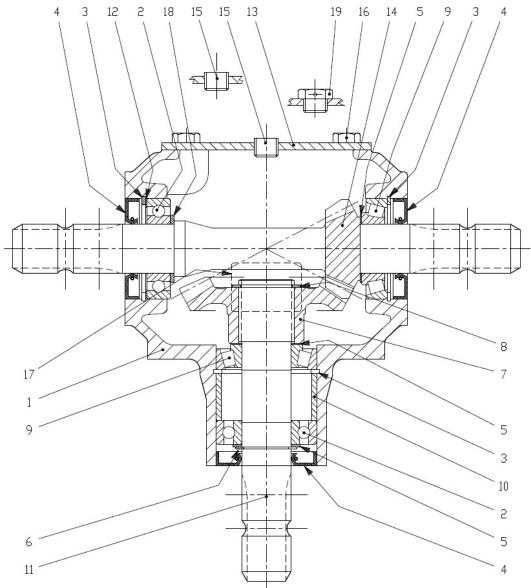
#### 725-BLD-R and 725-BLD-FR



Item	Part No.	Description	Qty
1	BLD-25025-AC	BLADE 250xDia 25 (Anti-Clk)	2
2	BLDB-294-25-FXD	BLADE BACK (294 CTR 25 deg)	1
3	BLDB-315-25	BLADE BACK (315 CTR 25 deg)	1
4	DF-BMP	J205 G/BOX BLADE MOUNT	1
5	BLD-25025H-WSR4	4xDIA 26 BLADE WASHER	4
6	12T-BBS	BLADE BACK SPACER	4
7	84RM-BSB	BLADE SPACER BUSH	4
8	BB25-16-32	BLADE BUSH	2
9	1/2F	1/2" FINE NYLOC NUT	4
10	12x3FSKS	1/2"x3" FINE SOCKET HEAD 12.9	4
11	DSW34	DISC SPRING 34x16.3 x2	4
12	M10	M10 NYLOC NUT	2
13	M10x25SKBH	M10x25 SOCKET BUTTON HEAD 10.9	2
14	M16	M16 NYLOC NUT	2
15	M16x60BZP	M16x60 BOLT	2

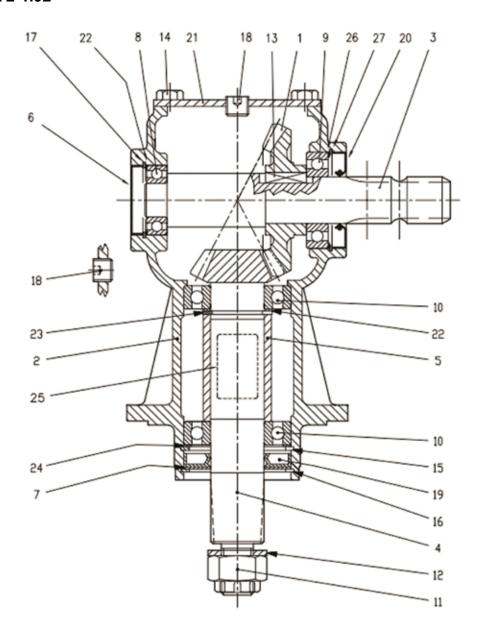
Item	Part No.	Description	Qty
1	BLD-25025-C	BLADE 250xDia 25 (Clk)	2
2	BLDB-294-25-FXD	BLADE BACK (294 CTR 25 deg)	1
3	BLDB-315-25	BLADE BACK (315 CTR 25 deg)	1
4	DF-BMP	J205 G/BOX BLADE MOUNT	1
5	BLD-25025H-WSR4	4xDIA 26 BLADE WASHER	4
6	12T-BBS	BLADE BACK SPACER	4
7	84RM-BSB	BLADE SPACER BUSH	4
8	BB25-16-32	BLADE BUSH	2
9	1/2F	1/2" FINE NYLOC NUT	4
10	12x3FSKS	1/2"x3" FINE SOCKET HEAD 12.9	4
11	DSW34	DISC SPRING 34x16.3 x2	4
12	M10	M10 NYLOC NUT	2
13	M10x25SKBH	M10x25 SOCKET BUTTON HEAD 10.9	2
14	M16	M16 NYLOC NUT	2
15	M16x60BZP	M16x60 BOLT	2

T27A - 267.245 - 1.92



	N.	<b>5</b>	
Item Part	No	Description	Qty
1 T27/	12 0.267.0300.0	0 CASING	1
2 T4A/	6 8.0.1.00870	BEARING 6207	2
3 T27/2	2 8.5.2.00131	SNAP RING 72 UNI7437	3
4 T27/	1 8.7.3.00055	OIL SEAL 35X72X10	3
5 T4A/-	4 0.259.7500.0	0 SHIM 35.3x48.0	3
6 LF13	5/7 8.5.1.00005	SNAP RING 35 UNI7435	1
7 T27/9	9 0.121.6000.0	0 CROWN WHEEL Z23 M5.3	1
8 T4A/	2 8.5.1.00029	SNAP RING 40 UNI7435	1
9 T27/8	8.0.9.00026	BEARING 30207	2
10 T27/5	5 0.267.7100.0	0 SPACER	1
11 T27/6	0.267.2209.0	0 SHAFT 1"3/8	1
12 T4A/	5 0.248.7500.0	0 SHIM 71.7	1
13 T27/	13 0.267.1302.0	0 COVER	1
14 T27/	16 0.267.6206.0	0 PINION Z12 M5.30	1
15 T4A/	10 8.6.6.00201	PLUG 3/8"GAS	2
16 N/A	8.1.1.00054	BOLT M10X20 8,8	4
17 N/A	0.124.7101.0	0 PLATE	1
18 T4A/	5 0.259.7525.0	0 SHIM 35.3x2.5	1
19 T27/	17 0.107.7100.0	1 OIL FILLER PLUG	1

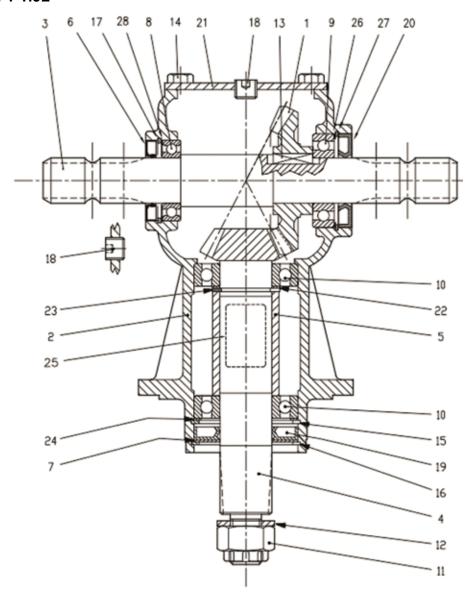
#### LF205H-205 872-1.92



Item	Part No		Description	Qty
1	0.135.5000.00	0.135.5000.00	Crown Gear Z23 M5	1
2	0.205.0302.00	0.205.0302.00	Casing	1
3	LF135/18	0.135.2001.00	Input Shaft	1
4	0.135.6008.00	0.135.6008.00	Pinion	1
5	LF135/10	0.135.7105.00	Spacer	1
6	8.7.0.00693	8.7.0.00693	Oil Cap	1
7	LF135/4	1.135.7100.00	Protective Washer	1
8	8.0.1.00034	8.0.1.00034	Ball Bearing 6205 (25x52x15)	1
9	LF135/15	8.0.1.00870	Bearing 6207	1
10	LF135/9	8.0.1.00871	Bearing 6208	2
11	LF135/1	8.2.2.00515	Castle Nut	1
12	LF135/2	8.3.2.00409	Bolt Washer 25x44x4	1
13	LF135/19	8.4.1.00993	Parallel Key B 10x8x30	1
14	M10x20SZP	8.1.1.00054	Bolts M10x20	4
15	8.5.2.00030	8.5.2.00030	Snap Ring (80x82.5x2.5)	1
16	LF135/3	8.5.3.00955	Snap Ring SB 81	1

17	8.5.2.01358	8.5.2.01358	Snap Ring (52x55x2.5)	1
18	LF135/13	8.6.6.00201	3/8" Gas Solid Plug	2
19	LF135/5	8.7.1.00748	Dust Lip 40x80x12	1
20	8.7.3.00055	8.7.3.00055	Oil Seal 25x72x10	1
21	0.205.1300.00	0.205.1300.00	cover	1
22	0.244.7500.00	0.244.7500.00	Shim Kit (40.2x51.5)	2
23	8.5.1.00680	8.5.1.00680	Snap ring (40x37x2.5 for shafts)	1
24	0.267.7500.00	0.267.7500.00	Shim Kit (69x79.7) LF135/7	1
25	0.205.7100.00	0.205.7100.00	Grascare Name Plate	1
26	T4A/5	0.248.7500.00	Shim Kit (60.3x71.7)	1
27	8.5.2.00131	8.5.2.00131	Snap Ring (72x75x2.5)	1

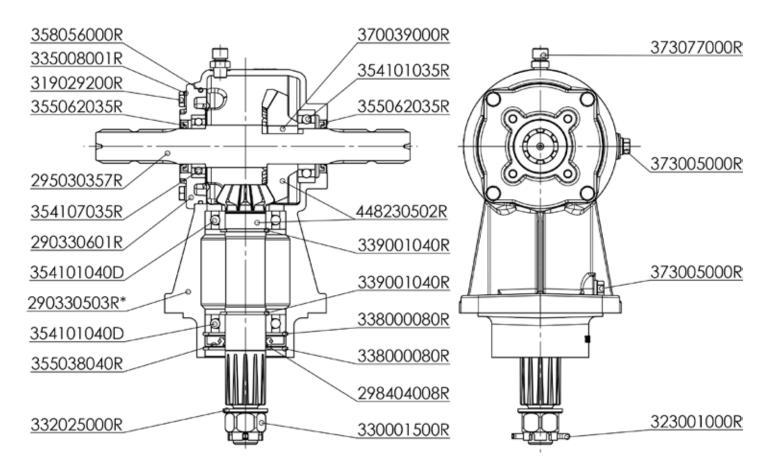
#### LF205TH-205.874-1.92



Item	Part No		Description	Qty
1	0.135.5000.00	0.135.5000.00	Crown Gear Z23 M5	1
2	0.205.0303.00	0.205.0303.00	Casing (LF135/12)	1
3	0.135.2002.00	0.135.2002.00	Shaft (LF135/25)	1
4	0.135.6008.00	0.135.6008.00	Pinion Shaft	1
5	0.135.7105.00	0.135.7105.00	Spacer (LF135/10)	1
6	8.7.3.01259	8.7.3.01259	Double Lip Seal (LF135/14)	1
7	1.135.7100.00	1.135.7100.00	Protective Washer (LF135/4)	1
8	8.0.1.00000	8.0.1.00000	Bearing 6007 (35x62x14)	1
9	8.0.1.00870	8.0.1.00870	Bearing 6207 (LF135/15)	1
10	8.0.1.00871	8.0.1.00871	Bearing 6208 (LF135/9)	2
11	8.2.2.00515	8.2.2.00515	Castle Nut (LF135/1)	1
12	8.3.2.00409	8.3.2.00409	Bolt Washer (LF135/2)	1
13	8.4.1.00993	8.4.1.00993	Parallel Key (LF135/19)	1
14	8.1.1.00054	8.1.1.00054	Bolts M10x20	4
15	8.5.2.00030	8.5.2.00030	Snap Ring (LF135/6)	1

8.5.2.00955	8.5.2.00955	Snap Ring (LF135/3)	1
85200648	8.5.2.00648	LF205/17 Circlip	1
8.6.6.00201	8.6.6.00201	Plug (LF135/13)	2
8.7.1.00748	8.7.1.00748 (LF135/5)	Double Lip Seal (40X80X12V)	1
8.7.3.00055 (357210)	8.7.3.00055	Oil Seal 35x72x10 (T4A/1)	1
0.205.1300.00	0.205.1300.00	Cover (LF205EP)	1
0.244.7500.00	0.244.7500.00	Shim Kit	1
8.5.1.00680	8.5.1.00680	Snap Ring (40x37.5x2.5) (LF135/7)	1
0.267.7500.00	0.267.7500.00	Shim Kit (69x79.7) LF135/7	1
N/A	0.205.7100.00	Name Plate	1
0.248.7500.00	0.248.7500.00	Shim Kit (60.3x71.7)	1
8.5.2.00131	8.5.2.00131 (LF135/27)	LF205/27 Circlip	1
0.113.7500.00	0.113.7500.00 (LF135/16)	Shim	1
	85200648 8.6.6.00201 8.7.1.00748 8.7.3.00055 (357210) 0.205.1300.00 0.244.7500.00 8.5.1.00680 0.267.7500.00 N/A 0.248.7500.00 8.5.2.00131	85200648 8.5.2.00648 8.6.6.00201 8.6.6.00201 8.7.1.00748 8.7.1.00748 (LF135/5) 8.7.3.00055 8.7.3.00055 0.205.1300.00 0.205.1300.00 0.244.7500.00 0.244.7500.00 8.5.1.00680 8.5.1.00680 0.267.7500.00 0.267.7500.00 N/A 0.205.7100.00 0.248.7500.00 0.248.7500.00 8.5.2.00131 8.5.2.00131 (LF135/27) 0.113.7500.00 0.113.7500.00	85200648 8.5.2.00648 LF205/17 Circlip  8.6.6.00201 8.6.6.00201 Plug (LF135/13)  8.7.1.00748 (LF135/5) Double Lip Seal (40X80X12V)  8.7.3.00055 (357210) 8.7.3.00055 Oil Seal 35x72x10 (T4A/1)  0.205.1300.00 0.205.1300.00 Cover (LF205EP)  0.244.7500.00 0.244.7500.00 Shim Kit  8.5.1.00680 8.5.1.00680 Snap Ring (40x37.5x2.5) (LF135/7)  0.267.7500.00 0.267.7500.00 Shim Kit (69x79.7) LF135/7  N/A 0.205.7100.00 Name Plate  0.248.7500.00 0.248.7500.00 Shim Kit (60.3x71.7)  8.5.2.00131 8.5.2.00131 (LF135/27) LF205/27 Circlip

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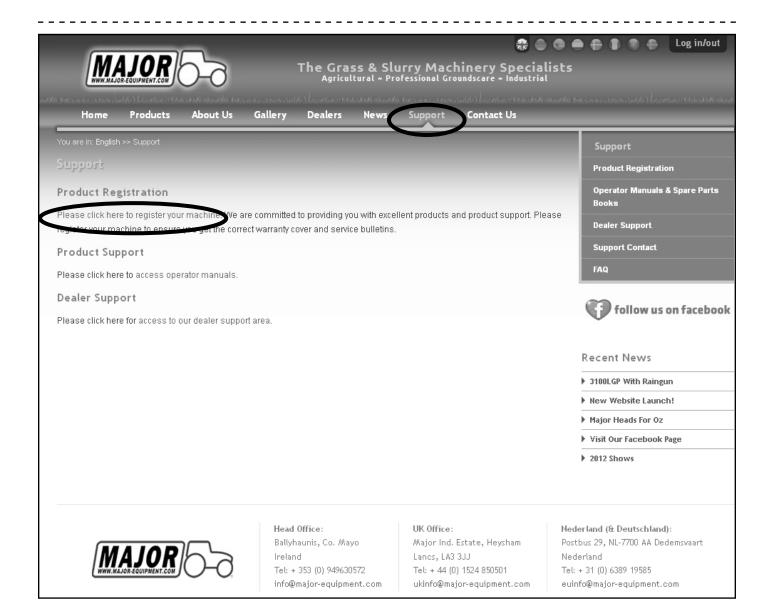


Item	Part No	Description	Qty
1	290330503R	HOUSING 3035 -R- D.123.5	1
2	290330601R	COVER	1
3	295030357R	SHAFT	1
4	298404008R	SEALING LID	1
5	319029200R	SCREW HEX HEAD M8x25x1.25 UNI5739 S8422	4
6	323001000R	COTTER PIN 5X50 UNI 1336	1
7	330001500R	CASTLE NUT M24x2 UNI5593	1
8	332025000R	WASHER	1
9	335008001R	LOCK WASHER M8 (8.1x14.8x1.6) DIN128B	4
10	338000080R	CIRCLIP INTERNAL 80x2.50 DIN472	2

11	339001040R	CIRCLIP EXTERNAL 40x2.50 DIN471/2 THICK	2
12	354101035R	BALL BEARING 35x72x17 6207	1
13	354101040DR	BALL BEARING 40x80x18 6208 -SKF-	2
14	354107035R	BEARING CUSC.6007 35x62x14 SF.D.Q.	1
15	355038040R	OIL SEAL 40x80x10 FPM/FKM	1
16	355062035R	OIL SEAL 035X052X007 PAR VITON-D.Q.	2
17	358056000R	OIL SEAL	1
18	370039000R	KEY	1
19	373005000R	PLUG 3/8" BSPT (GAS) HEX HEAD ZINC	2
20	373077000R	PLUG 1/4" BSPT (GAS) BREATHER	1
21	448230502R	BEVEL GEAR	1

Warranty: This machine is guaranteed for 12 months. No warranty is given where the machine is being used as a hire machine. Warranty is against faulty workmanship or parts, with the exception of components not of MAJOR'S manufacture or design, i.e. hydraulic components, universally jointed shafts, chains and tyres, etc., which are subject to the original manufacturers conditions. To register your machine for warranty, please go to the support section of our website www.major-equipment.com and enter your

details.





# HEAD OFFICE Major Equipment Intl Ltd

Ballyhaunis, Co Mayo Ireland

Tel: +353 (0) 9496 30572

### UK OFFICE Major Equipment Ltd

Major Ind. Estate, Heysham, Lancs, LA3 3JJ, UK Tel: +44 (0) 1524 850501

### Netherlands & Germany OFFICE Major Equipment Intl Ltd

Postbus 29, NL-7700 AA Dedemsvaart, Nederland Tel: + 31 (0) 6389 19585